

Copy for DIRECTOR INFRASTRUCTURE, SMTA

**TRANSPORT & MASS TRANSIT DEPARTMENT  
GOVERNMENT OF SINDH**



**PC – I (REVISED)**

**(PKR 4,295,662,042/=)**

**CONSTRUCTION OF ABDUL SATTAR EDHI**

**(formerly Orange Line BRT)**

**BUS RAPID TRANSIT (BRT) SYSTEM**

**(From Town Municipality Administration, Orangi to  
KDA Roundabout North Nazimabad, Karachi)**

**DECEMBER 2020**

**SINDH MASS TRANSIT AUTHORITY**

**TRANSPORT & MASS TRANSIT DEPARTMENT**

**GOVERNMENT OF SINDH**

**GOVERNMENT OF PAKISTAN  
PLANNING COMMISSION  
(INFRASTRUCTURE SECTOR)**

1	<b>Name of the Project</b>	Abdul Sattar Edhi Bus Rapid Transit [ASE BRT] from Town Municipal Administration [TMA] Orangi to Jinnah University for Women (Matriculation Board Office), Karachi.  [Change of project name is at <b>Annexure – 1</b> ]
2	<b>Location of the Project – Area Map</b>	The infrastructure of the ASE BRT project starts from TMA office in Orangi and ends in-front of Jinnah University of Women (near Matriculation Board Office). However, the ASE BRT bus operations will integrate with the Green BRT both physically and operationally. [Location map along-with concept of integration drawings are shown at <b>Annexure 2</b> ]
3	<b>Authorities responsible for:</b>  i) <b>Sponsoring</b>  ii) <b>Execution</b>         iii) <b>Operation &amp; Maintenance</b>	Government of Sindh  Sindh Mass Transit Authority [SMTA] [under the aegis of Transport & Mass Transit Department] [Notification is at <b>Annexure 3</b> ]  SIDCL is a public limited company established under the Companies Act 2017 [ <b>Annexure 4</b> ] According to a facilitation & implementation agreement between Sindh Infrastructure Development Corporation Limited [SIDCL] and TMTD, the ASE BRT Operations and Maintenance works will be carried out by the SIDCL for three years. The procurement of Buses and ITS equipment for ASE BRT will also be carried out by the SIDCL, but Government of Sindh will share the expenditures involved, according to the Facilitation & Implementation agreement carried out between the SIDCL and GoS. [ <b>at Annexure 5</b> ].
4 a	<b>Plan Provision:</b>  i) <b>If the project is included in the medium term/five year plan, specify actual allocation.</b>         ii) <b>If not then what warrants its inclusion and how is it now proposed to be accommodated.</b>	Not Applicable. At the time of Project start, the project was not included in the five years plan however considering the importance of the project as a feeder route to Green BRT, funding of which was announced by the Federal Government in 2014, the GoS decided to undertake the ASE BRT project through its own funds.  As per the decision taken in a meeting held on 12 <sup>th</sup> July 2014 under the chairmanship of Honorable Chief Minister Sindh, an amount of Pak Rupees 03.00 billion allocated for Green Line BRT corridor in the Annual Development Plan (ADP) 2014-15 would be diverted to Orange Line BRT [ <b>now ASE BRT</b> ] corridor after announcement of the Honorable Prime Minister to take up the construction of Green BRT through funding from the federal government. Japan International Cooperation Agency

	<p>iii) If not included in the current plan, if the project is proposed to be financed out of block provision, indicate.</p>	<p>[JICA] in its Karachi Transport Improvement Study [KTIP] has noted that the Orange BRT be the feeder route for Green BRT and must be simultaneously constructed to cater for ridership in adjoining areas. [Annexure 6]</p> <p>Not Applicable</p>																												
4 b	Provision in the current year PSDP/ADP	<table><tr><th>ADP</th><th>CAPITAL (M)</th><th>REVENUE (M)</th><th>TOTAL (M)</th></tr><tr><td>2015-16</td><td>2,063.308</td><td>18.065</td><td>2,081.373</td></tr><tr><td>2016-17</td><td>1,820.098</td><td>23.749</td><td>1,843.847</td></tr><tr><td>2017-18</td><td>1,477.62</td><td>25.82</td><td>1,503.441</td></tr><tr><td>2018-19</td><td>1,101.30</td><td>28.27</td><td>1,129.568</td></tr><tr><td>2019-20</td><td>414.30</td><td>520.02</td><td>934.320</td></tr><tr><td>2020-21</td><td>371.00</td><td>472.35</td><td>843.350</td></tr></table>	ADP	CAPITAL (M)	REVENUE (M)	TOTAL (M)	2015-16	2,063.308	18.065	2,081.373	2016-17	1,820.098	23.749	1,843.847	2017-18	1,477.62	25.82	1,503.441	2018-19	1,101.30	28.27	1,129.568	2019-20	414.30	520.02	934.320	2020-21	371.00	472.35	843.350
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5	Project Objectives:	<p>The main project objectives are defined as under:</p> <p>a) The ASE BRT shall connect the Green Line BRT with the thickly populated areas of Banaras Colony and Orangi Town, thus resulting in increasing the ridership of Green Line with easy and convenient transfers,</p> <p>b) To provide reliable, safe, affordable, high quality and fast BRT Bus Service,</p> <p>c) To improve the quality of life of commuters and decrease in environmental pollution in Karachi, To vastly improve the quality of public transport system in Karachi,</p> <p>d) To provide infrastructure that allows buses to ply in an efficient manner with exclusive right-of-way for a significant portion of their route length,</p> <p>e) Reduce travel time, and</p> <p>f) Additionally, the Orange Line Project can also be very helpful for bringing substantial ridership to Karachi Circular Railway (KCR) in future, as the KCR is located close to the AO Clock Tower intersection. It is pertinent to mention here that the Pakistan Railways has initiated a Revival of the KCR project on BOT modality, in compliance of the orders from the Honorable Supreme Court of Pakistan. The revival of the KCR and the operations of the BRTS in Karachi will result in substantial decrease of road congestion and will change the culture from private vehicle ownership to increased ridership in public transport, given proper operations management and timely implementation.</p>																												

	<p><b>i) Objectives of the sector/sub sector as indicated in the medium term/five year plan be reproduced.</b></p>	<p>The study for Karachi Transportation Improvement Project (KTIP), 2009-2012, JICA, proposed a transport sector master plan up to the year 2030, in which the public transport policies focus on mass transit system such as:</p> <ul style="list-style-type: none"> <li>- Mass transit system should provide higher services than existing buses in order to satisfy the need of such transit system and promote modal shift from private mode to public one, and</li> <li>- Bus Rapid Transit (BRT) should be introduced on major roads.</li> </ul> <p>The Transport Master Plan prepared under the KTIP, 2030 project by JICA proposes the revitalization of Karachi Circular Railway (KCR) on modern lines, 2 Mass Rapid Transit (MRT) lines (Blue and Brown Lines) and 6 BRT lines (Green, Red, Yellow, Orange, Aqua and Purple).</p> <p>ASE BRT shall be very helpful in increasing the ridership of the proposed Green Line BRT system (which is one of the busiest corridors proposed by JICA). The ASE BRT shall connect with the Green line station at KDA Roundabout in North Nazimabad.</p> <p><b>Annexure 7</b> shows the planned Mass Transit corridors as proposed by JICA in KTIP, 2030.</p>
	<p><b>ii) Linkages of the project with other sectoral objectives.</b></p>	<p>The Karachi Strategic Development Plan (KSDP) 2020 described 16 objectives for transport sector, among which following seven (7) are linked with this project:</p> <ul style="list-style-type: none"> <li>- Provide safe and efficient mobility for people/goods,</li> <li>- Improve public mass transportation system, targeting affordability and convenience,</li> <li>- Strengthen existing transportation infrastructure and services by considering various alternatives,</li> <li>- Minimize single-occupancy vehicle use,</li> </ul> <p>Evolving a comprehensive transportation plan development and modeling to address vehicular traffic, public mass transportation (bus line and rails based), parking to provide for development of roadway and public transport/mass transit infrastructure development priorities for long range</p> <ul style="list-style-type: none"> <li>- Develop transport infrastructure to support planned land use changes, especially strengthening links between Central Business District (CBD) and polycentric commercial center nodes. This will be ensured through</li> </ul>



		<p>proper physical and operational integration between ASE BRT and the Green BRT to cater for wider connectivity and hence ridership.</p> <ul style="list-style-type: none"> <li>- Improve safety, energy efficiency and air quality.</li> </ul>
	<p><b>In case of revised Projects, indicate objectives of the project if different from original PC-I.</b></p>	<p>The Project objectives are same as in the approved PC-1.</p> <p>The PC-1 is being revised primarily to incorporate the provisional costs of the following [<i>SIDCL Letter SIDCL(GLBRTS)/COO/2020/8010 dated 3<sup>rd</sup> November 2020 at Annexure 8</i>], in pursuance to the Facilitation &amp; Implementation agreement between GoS and the SIDCL (at Annexure 5):</p> <ul style="list-style-type: none"> <li>i- Establishment Charges of SIDCL amounting 2% of the Project Cost and 2% of the Project Cost for the Operations Unit;</li> <li>ii- Funding covering fleet/buses procurement, IITS, O&amp;M, Station Management and Clearing House shall be covered in the revised scope of PC-Is;</li> <li>iii- Routine and Periodic Infrastructure Maintenance; and</li> <li>iv- Operations Deficit, Insurance Cover, Provision of Taxes and other administrative expenses for the Project.</li> </ul>
6	<p><b>Description, Justification, technical parameters and technology transfer aspects (enclose feasibility study for Project costing Rs. 300 million and above)</b></p>	<p><b>a) Project Description</b></p> <p>The ASE BRT is one of the 6 BRT corridors identified in the KTIP 2030 study by JICA. The proposed BRT route shall serve Orangi, Banaras Colony and Qasba Colony areas, few of the most thickly populated areas in Karachi.</p> <p>The ASE BRT shall be physically integrated with the Green BRT (connecting Surjani Town to Municipal Park, Saddar). Owing to this, the project has a significance to serve as a major connectivity among various proposed mass transit systems of Karachi.</p> <p style="text-align: center;"><b><u>UPDATED STATUS OF THE PROJECT SINCE THE APPROVAL OF THE PC-1:</u></b></p> <p><b><u>INFRASTRUCTURE:</u></b></p> <p>The technical parameters in the approved PC-1 were based on the concept design and as per the approved PC-1, the infrastructure construction works were to be undertaken in the Engineering, Procurement and Construction [EPC] mode. The concept design prepared was all at-grade as indicated in the approved PC-1 [Technical Committee and the PDWP meeting minutes at Annexure 6].</p> <p>The Green BRT project financed by the Federal Government of Pakistan was at the advanced stage of implementation and the timelines of the Orange BRT project had to be matched with it to ensure simultaneous operation and commissioning.</p> <p>As per the SPPRA rules, the procurement of infrastructure works was undertaken in the EPC mode (in the year 2015) and</p>

	<p>proposals were invited. However, after detailed evaluation as per the SPPRA rules, four firms were pre-qualified out of which three firms submitted their bids. The lowest bid was +81.56% above the estimated cost of PKR 1,227,815,411/= (including construction, design, geotechnical and environmental impact assessment cost) [meeting minutes of Procurement Committee dated 5<sup>th</sup> November 2015 at Annexure 09].</p> <p>Subsequently, the procurement committee decided to terminate the bidding process under EPC mode (because of the significant difference in the bid price and approved cost estimate) and undertaken the infrastructure construction in the conventional Design-Bid-Build mode. Based on this, the project consultant [M/s NESPAK] was directed to prepare detailed design of the Orange BRT as a dedicated corridor [relevant documents at Annexure 10].</p> <p>Technical teams from the client and the consultant conducted site visits and coordination meetings with various stakeholders including the KIDCL (now SIDCL) to prepare and finalize the design. The detailed designs prepared by the consultant along-with the cross sections are also annexed with this PC-1 [relevant letters at Annexure 11].</p> <p>The station designs were to be kept in harmony with the designs prepared and finalized by the Green BRT consultant in order to ensure aesthetic harmony and time/cost efficiency as well. The project Consultants were provided with the details of the bus specifications (length of bus, floor height) and ITS specifications / requirements in order to finalize the designs of stations and depots. The design of the Abdul Sattar Edhi Interchange (at the interface of the ASE BRT and the Green BRT) was also provided to the project Consultant in order to ensure proper harmony between the two BRTs and the mixed traffic flow. However, the bus depot design was part of the detailed design undertaken by the Consultant. The geotechnical investigation works were undertaken by the TMTD separately. The TMTD undertook the environmental monitoring works in contract with the SUPARCO with necessary coordination of NESPAK. [relevant documents at Annexure 12].</p> <p>In order to minimize the traffic interruption and also considering the extension of the ASE BRT beyond Town Municipality Administration (TMA) office, an elevated U-turn was envisaged from Panch No. Intersection to the TMA office. This elevated part of the alignment was decided because the GoS planned to extend the BRT into Orangi Town in the future in order to ensure more connectivity and hence the ridership. Due to the limited ROW available beyond TMA Orangi (towards Nishan – e – Hyder Chowk), the planned extension shall have to be elevated This became one of the major differences in comparison with the concept design which was all at-grade, in terms of constructability (specially with reference to the utility relocations), time required and costing. Another difference was that the Orange BRT corridor</p>
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	<p>was divided in two packages <u>for the sake of procurement</u>. It was also decided that the BRT buses will operate on the inner lanes (to be semi-dedicated) of 1.5 Kms Bacha Khan flyover and the bridge at the Orangi Nallah shall be widened on either side to accommodate an additional lane for mixed traffic operations. [<i>relevant documents at Annexure 13</i>].</p> <p>[Package 1: from TMA office to Bacha Khan bridge and Package 2: Bacha Khan bridge to Jinnah University for Women].</p> <p>The Environmental Impact Assessment was carried out by the project Consultants. The detailed design along with the Engineer's Estimates and bidding documents were finalized in 2016 and accordingly the procurement of both packages was undertaken [<b>Annexure 14</b>]</p> <p>Massive efforts were also made for identifying and relocation of utilities along the Orange BRT corridor. The client undertook the Water Trunk Main works to address the water utility issue in coordination with the Karachi Water &amp; Sewerage Board. These works were important to be undertaken also for the smooth construction of the Abdul Sattar Edhi interchange which was undertaken by the then KIDCL [<b>Annexure 15</b>].</p> <p>The procurement process was carried out for Package 1 and Package 2 contract packages and the work orders were awarded to both contractors according to the SPPRA rules [work order for both packages <b>Annexure 16</b>]</p> <p>The detailed design was prepared, initially, keeping in consideration, the dedicated BRT corridor (along the median), BRT stations and one bus depot. However, considering the dilapidated condition of the underground utilities which used to result in frequent leakages and the road pavement condition, the Competent Authority approved to undertake the rehabilitation of the entire ROW including the traffic lanes of mixed traffic, utilities and the footpaths. This also includes the improvement (wearing course) works of the of the Bacha Khan bridge during the course of the project including illumination works. The consultant prepared the detail design of the full ROW and the works were undertaken by the respective contractors accordingly.</p> <p>During various utility improvement works (especially water utilities) / installation of pedestrian bridges / works at depot, frequent interventions / interruptions were made by the local residents raising their concerns. As a result of which, the Client in coordination with the project Consultant has addressed these concerns in design or at site.</p> <p><b>Current Alignment features</b></p> <p>The ASE BRT has now total route length of 3.88 kms (from TMA office Orangi till Jinnah University of Women). The alignment from Panch No. intersection till TMA office is</p>
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	<p>designed as elevated U-turn (to cater for future extension of the ASE BRT). The BRT will still run in the semi-dedicated section at the existing Bacha Khan flyover (about 1.5 km). Rest of the alignment is designed at-grade. No passing lanes at stations are proposed as this is a small BRT system.</p> <p>The project includes construction of busway (dedicated for BRT vehicles) in the median of the road with stations in the center of the median which will provide a high capacity (8,230 passengers per hour per direction) service with buses running at an average speed of 25-30 km/h.</p> <p><b><u>Integration and Maintenance</u></b></p> <p>Initially, this integration was done in such a manner that the ASE BRT buses were to turn left from the ASE corridor and enter into mixed traffic (along Green BRT corridor) to take a U-Turn from the KDA roundabout. It would then have to come back in mixed traffic to enter in the ASE corridor through ASE interchange.</p> <p>Various options were explored by the project design consultants of the ASE BRT and Green BRT as well as the operational consultants.</p> <p>The final option which was decided indicates that the ASE BRT buses will turn left from ASE BRT corridor (in mixed traffic) to enter in the Green BRT corridor and will travel in mixed traffic till the Hyderi Station of the Green BRT where these buses will physically enter into the Green BRT dedicated Corridor and will travel till Nagan Chowrangi.</p> <p>However, for the passengers who wish to travel to Numaish will have to alight at Hyderi station and will change the direction to board the BRT buses going towards Numaish. Additionally, according to the operational plan consultant, two more stations will have to be constructed along the Green BRT corridor adjacent to the Green BRT station (in-front of Dilpasand Shop). These stations will however be not of full width as that of the main corridor bus stations and will serve uni-directional BRT buses.</p> <p>This was decided with the SIDCL that this integration will be undertaken by the SIDCL but the expenditures involved will be borne by the GoS [Annexure 17]. Also a detailed Passenger Demand Forecast Report is attached at Annexure 26 which also demonstrates various routes that proves that the integration between ASE BRT and the Green BRT is of immense importance considering the connectivity purpose.</p> <p>The SIDCL will also undertake maintenance of the ASE BRT corridor (pavements, stations, depot) for three years' time period. The details of the cost expenditures provided by the SIDCL are annexed in the Cost Estimates section. These estimates have been provided as provisional estimates (PKR 500 million/=) from SIDCL vide Letter SIDCL(GLBRTS)/COO/2020/8010 dated 3<sup>rd</sup> November 2020 [Annexure 8]. Cost breakdown for Physical Integration and Infrastructure Maintenance is as follows:</p>
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**Improvement in Infrastructure  
(physical Integration and Infrastructure Maintenance)**

	Description	Rs. Million
1.	Construction of Entry & Exit of Orange Line Bus into Green Line BRT Corridor at KDA Chowrangi	45.0
2.	Construction of Entry & Exit of Orange Line Bus into Green Line BRT Corridor at Nagan Chowrangi	38.0
3.	Construction of Entry & Exit of Orange Line Bus from its Corridor into Mix Traffic	35.0
4.	Bus Station for Orange Line (either side) at Board Office Station of Green Line (30m x 3.5m)	52.0
5.	Routine Maintenance of Orange Line Corridor & Bus Stations for three years period	150.0
6.	Provision of Periodic Maintenance of Orange Line Corridor & Bus Stations for three years period	75.0
7.	Provision of Rectification of infrastructure during Trial Run of Buses	35.0
	<b>Sub-Total</b>	<b>430.0</b>
	Consultancy Cost (Design & Supervision)	20.0
	Contingencies	50.0
	<b>Total</b>	<b>500.0</b>

**Platform Screen Doors (Additional Scope)**

Platform screen doors (PSDs) are used at some train or subway or BRT stations to separate the platform from trains or buses. They are primarily used for passenger safety. They are a relatively new addition to many metro systems around the world, some having been retrofitted to established systems. They are widely used in newer Asian and European metro systems.

In original Detailed Design of ASE BRT, Automatic Doors were envisaged however afterwards, when the IITS consultant came on board, mutual discussions were held between the consultants of ASE BRT and the Green BRT and it was agreed that the Platform Screen Doors are to be installed at the platform interface to ensure passenger security and automatic synchronization with the buses.

The PSD (32 Nos. for 4 BRT stations) shall include all following equipment / material necessary to complete the system but not limited to:

- 1) There will be 32 PSDs to be installed at four stations of ASE BRT. They include double sliding doors / panels, fixed doors / panels, heavy duty VVVT type motors, driving unit, distribution board / control panel, door control units, automatic controls, manual control, locking units, emergency push button, key, audio visual indicators, built in surge protectors, weather proof header box, guide rails, steel support, power supply, etc.
- 2) Bus docking system / Positioning system for PSD including positioning sensors, microprocessor / communication board for set of doors, safety devices, control system, traffic lights, connectors, communication cables, manual door controls, etc.
- 3) Local and remote monitoring & control system for each

		<p>station including monitoring &amp; control software for local PC / platform screen local panel (PSL) with human machine interface (HMI), central station controller (CSC), key operated switch, Ethernet switches, gateways / converters, passive equipment, interface to ITS network (connection to Command &amp; Control centre of BRTS for monitoring and controlling of all platform screen doors.</p> <ol style="list-style-type: none"> <li>4) Remote monitoring &amp; control system for Command &amp; Control centre of BRT system including monitoring &amp; control software for remote server, Ethernet switches, gateways / converters, passive equipment, rack / cabinet, interface to ITS network.</li> <li>5) Cables and Conduits</li> <li>6) Any other required essential component / equipment and interconnecting cables.</li> </ol> <p>Complete technical specifications [Annexure 18] and detailed cost estimates are included in this document. The cost provision for PSD is being included in this revised PC-1 document as an additional item / head and the procurement of the PSD is yet to be undertaken.</p> <p><b>ASE BRT EXTENSION BEYOND TMA OFFICE</b></p> <p>The success of the mass transit projects depends upon the accessibility (one of the factors) to the potential riders. The then Karachi Mass Transit Cell (KMTC) proposed an extension in the Orange Line BRT facility beyond TMA office to make the BRT service facility more effective and feasible.</p> <p>The extension is proposed as a one-way loop starting from Kamal Petrol Pump (Panch Number Chowrangi) and rejoining at the same station [Annexure 13]. For extension loop of Orange Line BRT, the number of buses required and number &amp; location of stations can only be finalized after conducting detailed traffic surveys and topographic surveys showing existing utilities along the selected corridor. In the best interest of the overall mass transit program, it is proposed to undertake a detailed study to ascertain the most feasible extension loop along with the number and location of stations and potential ridership. This may be undertaken as the Phase 2 of the ASE BRT project. Considering the fact that the KCR project revival is also undertaken now, this extension may be of great effectiveness in providing connectivity to the residents of Orangi and neighborhood areas.</p> <p>A similar idea / proposal was also discussed in the 21<sup>st</sup> meeting of Board of Directors of SIDCL held on 22<sup>nd</sup> April 2020 wherein it was proposed that GoS may take steps to extend ASE BRT further inside Orangi to cater for more ridership and facilitation of the residents of Orangi town and neighbor areas. [reference at Annexure 22]</p>
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### **BRT BUS PROCUREMENT AND OPERATIONS:**

Initially, the BRT bus operations of the Green BRT and ASE BRT had to be undertaken by the GoS. The SIDCL, after the completion of infrastructure of the Green BRT, was to hand-over the infrastructure to the GoS.

The Public Private Partnership (the PPP) Policy Board headed by Chief Minister, Sindh in its 13<sup>th</sup> meeting held on 9<sup>th</sup> January 2015, accorded approval to market the project for private Partner solicitation in PPP mode of procurement. Minutes of meeting attached [Annexure 19]. In pursuance of the decision of PPP Policy, the SMTA in collaboration with the PPP unit, Finance Department launched the Bus Operations component of Green and ASE BRT Project through International Competitive Bidding (ICB) process under PPP mode.

The Request for proposal (RFP was issued to the following qualified bidders:

- 1) Platform Turizm Tasimacilik (Albayrak)
- 2) Fasial Movers

In response to the above procurement process, only one bid M/s Platform Turizm Tasimacilik (Albayrak) was received on 17<sup>th</sup> May 2017. The Technical & Financial Evaluation Committee, considered it ■ a poor response and decided to scrap the process to ensure healthy competition.

The Project was re-launched under Single Stage Two Envelope Bidding process. In response the following bidders submitted the proposals:

- 1- Daewoo Pakistan Express Bus Service Limited (Daewoo Pakistan)
- 2- A consortium of Crown Transport Pvt, Ltd, Rehman Coach, Haji Muzaffer Coaches and Tracking World (Pvt). Limited (Consortium of Crown Transport)

As ■ result of technical evaluation process undertaken by the Transaction Advisors (EY Ford Rhodes, HaiderMota BNR and Exponent Engineers), the TFEC recommended Crown Transport as preferred bidder based on the lowest bid and letter of Award was issue dated 5<sup>th</sup> Jan 2018. Later the SMTA and Transaction Advisors negotiated and finalized the draft Concession Agreement and placed the same before the PPP Policy Board to accord approval for signing of the concession agreement.

The PPP Policy Board in its 23<sup>rd</sup> Meeting held on 11<sup>th</sup> Jan 2018 approved the incorporation of the proposed amendments in the concession agreement and singing of concession agreement with preferred bidder [Annexure 20].

As per the policy the Draft Concession Agreement had to be vetted by the Law Department and sent to the Transport

	<p>Department on 31st July 2018 with an opinion that it cannot be signed during Interim Government Period. It was suggested that the after formation of new government the preferred bidder, concession agreement will be signed. In response to this preferred bidder willingly agreed to sign the agreement on 3rd September 2018.</p> <p>Later a meeting held on 14th September 2018 under the chairmanship of the Honorable Chief Minister the project was reviewed in terms of financial implications. The Commissioner Karachi / CEO SIDCL proposed that in order to reduce the operational subsidy to an affordable level for the Government of Sindh, the project may be restructured along the same lines as Peshawar BRT and Karachi BRT Red Line, which envisaged procurement of the buses by the Government and the O&amp;M by the Private Operator.</p> <p>Later in the meeting held on 16<sup>th</sup> September 2018, under the Chairmanship of Honorable Prime Minister of Pakistan, it has been agreed that the Federal Government would procure buses and handover the bus fleet to the Government of Sindh for managing operations of the bus operations. In this context the TMTD initiated summary for Chief Minister, Sindh bearing No.313 dated 17 September 2018.</p> <p>Subsequently, TMTD received record note of the Prime Minister visit to Karachi vide Prime Minister's Office Letter dated 12 October 2018 wherein KIDCL/SIDCL was directed to explore the options to operationalize the Green Line BRTS at the earliest. In pursuance to the above directives, the KIDCL/SIDCL presented following three options in its Board of Directors meeting held on 29<sup>th</sup> September 2018.</p> <p><b><u>Option 1:</u></b> Completion of Infrastructure of Green Line BRT as per the Scope defined in the revised PC-1 of Green Line prepared by the SIDCL.</p> <p><b><u>Option 2:</u></b> Operations of Green Line BRTS by KIDCL/SIDCL</p> <p><b><u>Option 3:</u></b> Joint Operations of Green Line BRTS with SMTA.</p> <p>Later in a meeting was held on 7<sup>th</sup> March 2019 under the Chairmanship of Chief Minister Sindh and it was decided that Transport Department shall write a letter to the Secretary, Cabinet Division to the effect that:</p> <p>a) It was decided in ■ meeting held on 16 September, 2018 at Karachi under the Chairmanship of Honorable Prime Minister of Pakistan that all the three components of BRTS Green Line as follows:</p> <ol style="list-style-type: none"> <li>Infrastructure Development</li> <li>Bus Operations including fleet procurement, O&amp;M for the contract period and</li> <li>Integrated intelligent Transportation System (IITS)</li> </ol> <p>shall be executed and financed by the Government of Pakistan. Besides this the TMTD shall write ■ letter to KIDCL / SIDCL to the effect that:</p> <p>b) The IITS component of ASE BRT may be taken up along</p>
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	<p>with IITS component of BRT Green Line Under a single Contract by SIDCL/GOP. However, the GoS shall pay the cost component of ASE BRT's IITS. This arrangement will ensure uniformity of standards and integration.</p> <p>The TMTD was also advised to scrap the earlier procurement process of Bus Operations Component of BRT Green and Orange Line and initiate ■ fresh procurement process of Bus Operations for Orange Line in Public Private Partnership mode.</p> <p>On 5<sup>th</sup> September 2019, the SMTA vide Letter No.SMTA/BUSOPPS/OL-GL/1555 to CEO SIDCL regarding the ASE BRT project [Annexure 21].</p> <p>This letter referred to meeting held on 4<sup>th</sup> September 2019 under the Chairmanship of Secretary TMTD wherein it was discussed that the ASE BRT shall be integrated with Green BRT as decided by the Honorable Chief Minister, Sindh on 16<sup>th</sup> July 2019. It was also decided that the ASE BRT operations extended up to Nagan Chowrangi to make it more useful / accessible for users without needing them to transfer at Board Office. In addition to this GoS had requested to SIDCL may procure fleet of ASE BRT along with IITS, complete Operations &amp; Maintenance (O&amp;M) may be outsourced to SIDCL whereas the GoS shall provide funds to SIDCL for prospective bus procurement and operations of ASE BRT project.</p> <p>Later on 22<sup>nd</sup> April 2020, SIDCL 21<sup>st</sup> Board of Directors meeting held at the Cabinet Committee Room, 7<sup>th</sup> Floor Sindh Secretariat Building No.1 Karachi SIDCL considered the proposal in its BOD and Technical Committee and subject to financial arrangements and technical aspects due to economy of scales concerned [Annexure 22].</p> <p>The SIDCL apprised that GoS incorporated the mandate of operations of Orange Line in the Draft Facilitation Agreement of Green Line. However, the Cabinet division directed to have separate arrangements with GoS on Orange Line, subject to technical and financial aspects. In compliance of, reference of Orange Line in the Facilitation Agreement of Green Line was removed and ■ separate Orange Line agreement were drafted and signed between the SIDCL &amp; GoS on 26<sup>th</sup> November 2020 after the all approval from the Competent Authority (Attached Annexure 5). As per the agreement, the GoS shall pay to SIDCL the costs and other charges relating to procurement in three tranches.</p> <ol style="list-style-type: none"> <li>110% of the estimated contract price under the project contracts (including the LC amount) for the procurement of fleet/buses and IITS in the first tranche in the designated account of National Bank of Pakistan by the 1<sup>st</sup> Quarter FY 2020-21. A joint LC for Green and Orange Line procurements shall be established for USD payments under the project contracts.</li> <li>The second tranche will be due on procurement of O&amp;M, Stations Management, Clearing House and periodic</li> </ol>
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		<p>Infrastructure Maintenance for 42 months.</p> <p>c) The 3<sup>rd</sup> Tranche covering operations deficit for 42 months shall be released within three months of the 2<sup>nd</sup> Tranche.</p> <p>Besides this cost for procurement and operations, GoS shall pay SIDCL on demand any actual charges for the ASE BRTS procurement and operations including increase in price under Project Contracts due to variation, taxes and insurance charges as prescribed in the [Cost Estimates].</p> <p><b><u>INTEGRATED INTELLIGENT TRANSPORT SYSTEM:</u></b></p> <p>Initially the Intelligent Transportation System was envisaged only for the ASE BRT which required revenue generation equipment (ticket machines, hardware, software, etc.) and ITS infrastructure (Passenger Information system, Automated vehicle location system, transit signal priority, hardware, software, etc.) installed at the stations, inside the buses and hardware required for the system to operate from ■ Command and Control Center, which will be ■ common facility for all future mass transit systems in Karachi and is planned to function under the SMTA.</p> <p>The feasibility study undertaken by M/S NESPAK includes detailed Revenue collection / ITS system required for Orange Line corridor along with its costing.</p> <p>At later stage, to support the integration of operations of all BRT lines, the SIDCL hired international consultant M/S BLIC GmbH JV to perform feasibility study and preliminary design of Green BRT and ASE BRT for the installation of Integrated Intelligent Transport System. A tripartite agreement between Government of Sindh (Transport and Mass Transit Department), KIDCL and M/S BLIC GmbH JV was signed. Under the agreement, it was envisaged that feasibility study, preliminary design, bidding documents and procurement support for ITS of BRT Green and Orange Line will be financed by SIDCL whereas the supervision and the installation of the Integrated Intelligent Transport System on both BRT Green and Orange Line will be financed by the Government of Sindh. For this purpose, a new feasibility was undertaken (Annexure 23) and on the basis of feasibility, ■ new ADP Scheme named as "Integrated Intelligent Transport System for Karachi" costing Rs. 5013.000 million was approved by Planning and Development Department, Government of Sindh. SMTA, GoS initiated procurement of ITS for BRT Green and Orange Line through international competitive bidding process. Prequalification of bidders and preparation of RFP was under process.</p> <p>Later on, as per Summary for Chief Minister, Sindh, Summary no#318 dated 06.11.2018, para 25 &amp; 26 [Annexure 24], it is stated that</p> <p><i>"25(a). it is decided in a meeting held on 16<sup>th</sup> September, 2018 at Karachi under the chairmanship of Honorable Prime Minister of Pakistan that all the three components of BRT Green Line i.e. (1) Infrastructure Development (2) Bus Operations including fleet procurement, O&amp;M for the contract</i></p>
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		<p>period, and (3) Integrated Intelligent Transport System (IITS), shall be executed and financed by GOP".</p> <p>Furthermore, it is stated that TMTD shall write letter to KIDCL (now SIDCL) to the effect that "26(a). The IITS component of BRT of Abdul Sattar Edhi BRT may be taken up along with IITS component of Green BRT under a single contract by KIDCL/GOP. However, the GOS shall pay the cost component of the Abdul Sattar Edhi BRT's IITS. This arrangement will ensure uniformity of standards and integration.</p> <p>After the correspondence on above mentioned arrangement on IITS, the SIDCL has submitted cost estimate of ITS for ASE BRT [Cost Estimates],</p> <p>The capital cost of ITS equipment is US\$2,377,977 excluding 30% taxes in local currency, Operation Cost of ITS is PKR 33,700,000 for 3 years, it also includes maintenance cost PKR 44,000,000 for 3 years.</p>
		<p><b><u>Technical Parameters</u></b></p> <p><b><u>Design Specifications</u></b></p> <p><b>Route Length</b></p> <p><b>Total Length = 3.88 Kms</b> (from TMA office till Jinnah University for Women)</p> <p><b>At-Grade Dedicated Section: 1.651 Kms</b></p> <p><b>Elevated Section: 0.729 Km</b></p> <p><b>Mix Traffic: 1.5 Kms</b> (at Bacha Khan Flyover)</p> <p><b>Stations:</b> Total 4 (one elevated and three at-grade) 2 station each in Package 1 and Package 2. The additional 2 stations along the Green BRT corridor adjacent to the Green BRT Station (in front of Dilpasand shop) as per the proposal of the operational consultants are to be undertaken by the SIDCL.</p> <p><b>Cross Slope: 2%</b></p> <p>A set of Detailed Design drawings prepared by the project consultant M/s NESPAK at [Annexure 11]</p> <p><b><u>VEHICLE SPECIFICATIONS:</u></b></p> <p>Please refer to [Annexure 25]</p>
7	Capital Cost Estimate	<p>i) Overall Cost Summary for Revised PC-1 with total cost of PKR 4,295,662,042/= is attached in the <b>Cost Estimates</b> section.</p> <p>It is mentioned that the on-going construction works will be</p>

	<p>completed within the sanctioned amount of <b>PKR 1,413,247,614/=</b> including rest of the construction works and construction claims (if any).</p> <p>The cost of the supervision consultant has been included till June 2022 (including Defects Liability Period). In comparison with the approved PC-1 amount under this head, the cost spent is substantially more owing to the project delay.</p> <p>The PMU establishment cost estimate (Revenue component for expenditures of the project management unit) has been revised to 5% of the construction cost. In comparison with the approved PC-1 amount under this head, the cost spent is substantially more owing to the project delay.</p> <p>One additional item of Platform Scree Doors (with the cost of PKR 103,519,922) has been included in the Revised PC-1. The cost details of the PSD are also provided. Procurement of the PSD is yet to be undertaken.</p> <p>ii) Infrastructure Works Cost estimates (and comparative analysis of Package 1 and Package 2 Construction Contracts). It may be noted that this comparative analysis has been made in between the Engineer's Estimate (prepared as a result of detailed design) and the Work Done <u>till date</u>. Since the civil works are on-going, the full and final cost expenditures can only be ascertained at the handing over stage when the Final Bill from the contractor is processed. The same goes with the expenditures against the consultant costs and the establishment cost.</p> <p>However, it is anticipated that the <u>civil works will be completed till March 2021</u>.</p> <p>iii) Provisional Estimates provided by the SIDCL for procurement of 20 BRT Buses and ITS equipment, Bus Operations &amp; Maintenance (annually for three years) and Integration and infrastructure maintenance are provided at <b>[Cost Estimates]</b>. A summary table of cost estimates provided by the SIDCL is mentioned below.</p>
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S. No.	Component	Amount in FEC - US\$	36 % T buses 30% for
<b>CAPEX COST</b>			
1	12 m Diesel Hybrid Buses (20 Nos.)	3,110,600	179,170,560
2	IITS (Hardware + Software + Taxes @ 30%)	2,377,977	60,636,306
	Total (A)	5,488,577	239,806,866
	Total (A) in PKR		1,117,979,260
<b>OPEX COST</b>			
		PKR	Amount in PKR (# Years)
	Bus Ops O & M	187,234,740	561,704,220
3	- Total Revenue (Fare <sup>5</sup> + Non-Fare <sup>6</sup> )	172,915,528	518,746,884
	- Operations' Deficit	14,319,112	42,957,336
4	ITS Operations	11,230,000	33,700,000
5	ITS Maintenance (2 yrs warranty + 1 year S&M)		44,000,000
6	Station Management <sup>7</sup>	43,200,000	129,600,000
7	Operation Unit	20,000,000	60,000,000
	Total Subsidy Req. (B)	88,749,112	310,257,336
	Total (A+B <sup>8</sup> )		1,428,236,596
8	Add 2% Consultancy Charges (Design, Transaction, Legal and Operations Advisory)	28,564,731.91	
9	Add 2% Contingencies (Unforeseen/hedging/price variation/ancillary)	28,564,731.91	
	Add 2% Insurance of Government Asset (0.67% per year)	28,564,731.91	
10	Add 2% Establishment Charges of SIDCL	28,564,731.91	
11	Improvement in Infrastructure (Physical Integration & Infra. Main.)	500,000,000	
	Grand Total		2,042,495,523.25

Final Cost per bus as per the procurement undertaken by the SIDCL: USD 155,000/=

Conversion Rate used: 1 USD= PKR 160

Ridership of ASE BRT: 24,225 passengers / day (analyzed by Consultants)

Fare revenue is calculated at an average Fare of PKR 22 per passenger

Non – Fare revenue is taken at 3% of the Fare Revenue because of fewer stations on the ASE BRT corridor.

These estimates clearly indicate that the Foreign Exchange Component is as follows:

FEC for 12m Diesel Hybrid Buses (20No):  
USD 3,110,600

FEC for IITS (Hardware + Software + Taxes @30%):  
USD 2,377,977

Total FEC: USD 5,488,577/= only.

#### Date of Estimation

The detailed design / engineer's estimates have been carried out in **2016** and the civil work procurement were carried out on the basis of the engineer's estimates. Similarly, the base year to calculate provisional estimates for the procurement of Buses and ITS and Operations & Maintenance is 2020.

#### Basis of Cost Determination

- The base year is 2016 for Infrastructure Works and 2020 for the procurement of Buses and ITS equipment.
- USD / PKR parity: 1 USD = PKR 160 (as provided by the

		<p>SIDCL)</p> <ul style="list-style-type: none"> <li>■ The cost of civil works / infrastructure is based on the detailed design undertaken in the year 2016. However, later upon the instruction of the Client, the detail design also envisaged the full Right of Way including mixed traffic lanes, footpaths, and utilities.</li> <li>■ The engineer estimates were prepared on the basis of market rates.</li> <li>■ Cost of the utility relocation was taken as PKR 200 million in the approved PC-1 however, in total, PKR 266,900,643 million has been utilized for utility relocations.</li> <li>■ Physical Contingency is being considered at 3% of the cost.</li> <li>● Physical Contingency is taken @ 3% of cost.</li> <li>● Design Consultancy Cost is set 1% of construction cost.</li> <li>● Detailed Supervision is taken as 2% of construction cost.</li> <li>● Independent Engineer Cost @1% of cost. Since the project has not been implemented in EPC mode, vetting of the design is not required by an Independent Consultant hence the savings of the approved amount is noted.</li> <li>■ Establishment charges are now taken as 5% of construction cost in this Revised PC1. The increased amount required is owing to the monthly PMU expenditures.</li> <li>■ Third Party Monitoring is set as 1% of construction cost.</li> </ul>
9	<p><b><u>Demand/Supply Analysis</u></b></p> <p><b>Existing capacity of services and its supply/demand</b></p>	<p>As per JICA Feasibility Report for Green and Red Lines BRT, full loading capacity of a minibus/coach is 35 while that of a large bus is 70, whereas capacity of a Standard BRT Bus proposed for Orange Line is 80 Passengers. The dedicated BRT corridor using standard buses with two bus bays shall have the capacity of approximately 8,230 passengers per hour per direction (pphpd). Bus stops for existing bus network are provided along the corridors with the necessary length depending on traffic demand. Some bus stops have off-line loading areas which are located out of traffic lane. However, buses do not properly stop in the loading area due to lack of proper rules. Buses often stop in the second lane from the curb side lane which forces passengers to cross the curb side lane. As per JICA, the present bus passenger demand reflects the limit of the capacity. The roof top riding shows that the demand exceeds bus capacity. Since the full loading capacity of a minibus is 48 while the number of passengers in case of roof top riding is about 55, it can be said that the demand is higher than supply by 15%. In addition, a part of motorcycle and rickshaw users are potential passengers using good public transport system.</p> <p>JICA in their study for KTIP, projects that Karachi's population will grow at a rate of over 4% per year. This translates to an additional population of 10 million in the next 20 years and the total population will be more than 30 million in 2030. Gadap, Keamari, and Bin Qasim Towns are expected to accept a large part of the population growth.</p>



		<input type="checkbox"/> Surajni to Petrol Pump Nazimabad <input type="checkbox"/> Surjani to CBD Area <input type="checkbox"/> Surjani to Merewether Tower <input type="checkbox"/> Surjani to Merewether Tower via I. I. Chundrigar Road <p>The different routes for BRT Lines were proposed based on the condition of existing public transport routes in Karachi and the calculated segmental demand through the Origin-Destination pairs. The Origin-Destination pairs with boarding / alighting survey data was used for the demand forecast analysis to calculate the segmental demand. However, the STARDA transport model for Green Line and Orange Line BRT system from KTIP was also used to calculate the demand ridership. The OD matrices provided in KTIP were used along the survey data to redevelop the model for the new ridership demand and to proposed different routes of Green and Orange BRT Lines. Line BRT.</p>
10	<b>Financial Plan</b>  <b>Sources of Financing</b>  a) Equity   b) Debt  c) Grants	100% by Government of Sindh (for Infrastructure, Procurement of Buses and ITS, Bus operations and maintenance, Integration with Green BRT project and Maintenance of infrastructure for three years)  Nil  Nil
11	<b>Benefits of the Project and Analysis</b>          <b>Financial Benefits</b>          <b>Economic Benefits</b>	<p>The BRT infrastructure including procurement of buses and Revenue / ITS equipment would be implemented under the public sector for which necessary funds are available with the Government of Sindh. The Bus and Revenue / ITS System operations have been proposed by the Client under the Public Private Partnership (PPP) mode. Hence, financial analysis including NPV, FIRR, BCR and other financial parameters will be determined at later stage by the Government of Sindh.</p> <p>The major economic benefits of the project are:</p> <ul style="list-style-type: none"> <li>• Travel time savings,</li> <li>• Vehicle operating cost (VOC) savings,</li> <li>• Reduction in vehicle emissions, and</li> <li>• Indirect benefits such as comfortable ride on modern air-conditioned buses from stressful minibuses and improvement of the city's image.</li> </ul> <p>The BRT Orange line project involves negative benefits for car users due to transit priority signaling control at all intersections.</p>


	<p><b>Social Benefits</b></p> <p><b>Environmental Impacts</b></p>	<p>Orange Line BRTS shall connect the dense population of Orangi and Qasba with Central Business District (CBD) through the proposed Green Line BRT (already approved by ECNEC). Residents of these areas are direct beneficiaries of the project. Under the land-use restructuring program, shopping malls and high-rise buildings on both sides of the corridors would need to be developed to increase the ridership and revenue generation activities to make the project viable and improve the quality of life of people.</p> <p>A detailed EIA has been carried out and the EIA report is at <b>Annexure 14</b>.</p>																																				
12	<p><b>a) Implementation Schedule</b></p> <p><b>Indicate starting and completion date of the project</b></p> <p><b>b) Result Based Monitoring (RBM) Indicators</b></p>	<p>The construction of infrastructure construction was started in June 2016 and is expected to be completed by March 2021.</p> <p>The SIDCL has already undertaken the procurement of Buses and the financial bids have already been opened on 16<sup>th</sup> October 2020. Similarly, the SIDCL has also already started procurement process of ITS equipment. Both the buses and the ITS equipment delivery may take six to eight months after the completion of the procurement process (given any unforeseen circumstances like Covid-19 pandemic don't hamper the procurement process or supply chain)</p> <p>At [Annexure 27]</p>																																				
13	<p><b>Management Structure and Manpower Requirements</b></p> <p><b>Administrative arrangements for implementation of project.</b></p> <p><b>The manpower requirements by skills during execution and operation of the project be provided.</b></p>	<p>In a meeting under the Chairmanship of the Honorable Chief Minister Sindh, approval for establishing Sindh Mass Transit Authority (on the same lines that of the Punjab Mass Transit Authority) was given (Annexure 6). Subsequently, the Sindh Mass Transit Cell was notified on 23<sup>rd</sup> November 2016 as an interim setup (under the administrative control of the TMTD), however with all such functions as envisaged in the SMTA Act 2016. The SMTA was however notified on 5<sup>th</sup> October 2017. (Annexure 3).</p> <p>Following is the indicative human resource strength utilized in the implementation of the <u>ASE BRT infrastructure works</u>,</p> <table border="1"> <thead> <tr> <th>No</th><th>Position</th><th>Person Months</th></tr> </thead> <tbody> <tr><td>1</td><td>Project Manager</td><td>36</td></tr> <tr><td>2</td><td>Structure Engineers</td><td>27</td></tr> <tr><td>3</td><td>Road Design Engineers</td><td>54</td></tr> <tr><td>4</td><td>Traffic Management Engineer</td><td>27</td></tr> <tr><td>5</td><td>Geotechnical Specialist</td><td>4</td></tr> <tr><td>6</td><td>Hydrologist</td><td>4</td></tr> <tr><td>7</td><td>Architect</td><td>6</td></tr> <tr><td>8</td><td>Cost Estimator</td><td>15</td></tr> <tr><td>9</td><td>Construction Planner</td><td>15</td></tr> <tr><td>10</td><td>Environmental Specialist</td><td>3</td></tr> <tr><td>11</td><td>Document Controllers</td><td>96</td></tr> </tbody> </table>	No	Position	Person Months	1	Project Manager	36	2	Structure Engineers	27	3	Road Design Engineers	54	4	Traffic Management Engineer	27	5	Geotechnical Specialist	4	6	Hydrologist	4	7	Architect	6	8	Cost Estimator	15	9	Construction Planner	15	10	Environmental Specialist	3	11	Document Controllers	96
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		<p>The SIDCL has provided indicative human resource strength for the <u>BRT Operations Unit</u> vide Letter at (Annexure 8), produced below</p> <table><tr><td>1</td><td>General Manager (Operation)</td><td>9</td></tr><tr><td>2</td><td>Senior Manager (Bus Ops &amp; ITS)</td><td>9</td></tr><tr><td>3</td><td>Manager (Procurement &amp; Management)</td><td>18</td></tr><tr><td>4</td><td>Manager Transport &amp; Bus Operations</td><td>10.80</td></tr><tr><td>5</td><td>Manager (Finance &amp; Revenue)</td><td>10.80</td></tr><tr><td>6</td><td>Manager (NFR)</td><td>10.80</td></tr><tr><td>7</td><td>Communication / Public Relation Officer</td><td>10.80</td></tr><tr><td>8</td><td>Assistant Manager (IITS)</td><td>10.80</td></tr><tr><td>9</td><td>Assistant Manager (Bus Ops)</td><td>10.80</td></tr><tr><td>10</td><td>Assistant Manager (Admin)</td><td>10.80</td></tr><tr><td>11</td><td>Accounts Office</td><td>10.80</td></tr><tr><td>12</td><td>Accountant / Financial Operations (2)</td><td>10.80</td></tr><tr><td>13</td><td>Data Analyst (4)</td><td>10.80</td></tr><tr><td>14</td><td>Supervisor / Quality Control Inspectors (4)</td><td>10.80</td></tr><tr><td>15</td><td>Receptionist (1)</td><td>10.80</td></tr><tr><td>16</td><td>IT Assistant (2)</td><td>10.80</td></tr><tr><td>17</td><td>Drivers (5)</td><td>10.80</td></tr><tr><td>18</td><td>Dispatch Riders (2)</td><td>10.80</td></tr><tr><td>19</td><td>Office Boys (4)</td><td>10.80</td></tr><tr><td>20</td><td>Contingency Staff (3)</td><td>10.80</td></tr><tr><td colspan="2">TOTAL</td><td>219.60</td></tr></table>	1	General Manager (Operation)	9	2	Senior Manager (Bus Ops & ITS)	9	3	Manager (Procurement & Management)	18	4	Manager Transport & Bus Operations	10.80	5	Manager (Finance & Revenue)	10.80	6	Manager (NFR)	10.80	7	Communication / Public Relation Officer	10.80	8	Assistant Manager (IITS)	10.80	9	Assistant Manager (Bus Ops)	10.80	10	Assistant Manager (Admin)	10.80	11	Accounts Office	10.80	12	Accountant / Financial Operations (2)	10.80	13	Data Analyst (4)	10.80	14	Supervisor / Quality Control Inspectors (4)	10.80	15	Receptionist (1)	10.80	16	IT Assistant (2)	10.80	17	Drivers (5)	10.80	18	Dispatch Riders (2)	10.80	19	Office Boys (4)	10.80	20	Contingency Staff (3)	10.80	TOTAL		219.60
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16	IT Assistant (2)	10.80																																																															
17	Drivers (5)	10.80																																																															
18	Dispatch Riders (2)	10.80																																																															
19	Office Boys (4)	10.80																																																															
20	Contingency Staff (3)	10.80																																																															
TOTAL		219.60																																																															
14	Additional projects / decisions required to maximize socio-economic benefits from the proposed project	<p>i. <i>Proper integration</i> of ASE BRT and Green BRT must be implemented to ensure connectivity and convenience of passengers.</p> <p>ii. <i>Enforcement</i> of traffic laws to achieve lane discipline and proper implementation of traffic management techniques.</p> <p>iii. <i>Policymaking</i> and <i>implementation</i> of TOD along ASE BRT.</p> <p>iv. <i>Extension of the ASE BRT, as Phase II</i>, to be taken up on immediate basis to cover wider connectivity and hence increased ridership. The study conducted for the travel demand needs to be updated to cater for this extension.</p> <p>v. <i>Accessibility</i> to be provided at the Bacha Khan bridge for the public residing under the bridge.</p>																																																															
15	<u>Certificate</u> The name, designation and Phone # of the officer responsible for preparing and checking be provided. It may also be confirmed																																																																

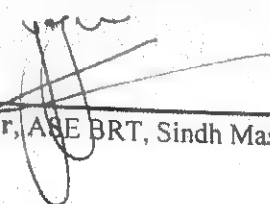


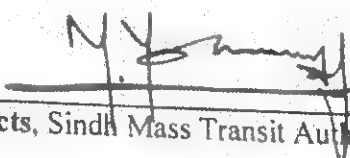
The PC-1 along with certificate must be signed by the Principal Accounting Officer to ensure its ownership.

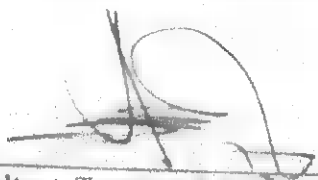
Prepared by:


  
(Executive Engineer, Sindh Mass Transit Authority)

Checked by:

  
(Project Director, ASE BRT, Sindh Mass Transit Authority)

  
(Director Projects, Sindh Mass Transit Authority)

  
(Chief Consultant, Transport & Mass Transit Department -  
former Director Bus Operations, Sindh Mass Transit Authority)

  
(Director Planning & Coordination, Transport & Mass Transit  
Department - former Director ITS, Sindh Mass Transit Authority)

Recommended by:

  
(MANAGING DIRECTOR, Sindh Mass Transit Authority)

Approved by:

  
( SECRETARY - Transport & Mass Transit Department,  
Government of Sindh)

Countersigned by:

(CHAIRMAN - Planning & Development Board,

## **COST ESTIMATES**

## FINAL COST ESTIMATES - ABDUL SATTAR EDHI BRT PROJECT

S. No.	Description	Original PC-1 Amount (Rs.)	Revised PC-1 Amount (Rs.)	Comments
<b>A Infrastructure</b>				
1	Total Construction Cost	1,413,247,614	1,413,247,614	The construction works are on-going. Remaining construction works can be finished within this amount.
2	Design Cost (1% of Construction Cost)	14,132,476	18,387,032	No additional expenditure is expected under this head.
3	Geotechnical Investigation	6,000,000	6,000,000	No additional expenditure is expected under this head. The savings under this head may be re-appropriated per the approval of the P&D department.
4	Environmental Impact Assessment	5,000,000	5,000,000	No additional expenditure is expected under this head. The savings under this head may be re-appropriated per the approval of the P&D department.
5	Detailed Supervision (2% of Construction Cost)	28,264,952	200,121,728	The Revised amount includes Consultant's monthly fees till June 2021 and also till end of DLP i.e June 2022.
6	Design Vetting Consultant (1% of Const Cost)	14,132,476	14,132,476	No expenditures made till date.
7	Establishment Charges (5% of Const. Cost)	70,662,380	70,662,380	The Revised amount includes monthly PMU expenditures till end of DLP i.e June 2022.
8	Third Party Monitoring (1% of Const. Cost)	14,132,476	14,132,476	No expenditures made till date.
9	Utility Relocation	200,000,000	266,900,643	No additional expenditure is expected under this head.
10	Platform Screen Doors (32 No.)	-	103,519,922	This is an additional item that must be installed at all four stations to ensure operational integration with Green BRT project.
	<b>Sub Total</b>	<b>1,723,174,946</b>	<b>2,112,104,271</b>	
10	Contingency (3%)	51,695,248	51,695,248	No expenditures made till date.
	<b>Total</b>	<b>1,774,870,194</b>	<b>2,163,799,519</b>	
11	Escalation Amount (Rs.)	89,367,000	89,367,000	The claims have been processed considering the current Extension of Time (EOT) approved by the Consultant. Further claims (if any) may be covered under the head of Total Construction Cost (Head# 1).
	<b>Total Cost of Infrastructure, Design, Supervision and Relocation</b>	<b>1,864,237,194</b>	<b>2,253,166,519</b>	Additional amount of PKR 388,929,325 includes regularization of the expenditures paid in addition to the approved amount under respective heads as well as the cost of PSD (head # 10). Part of this amount may be reappropriated within the heads of approved PC-1 per the approval of the P&D Department.
<b>B Buses &amp; ITS Equipment (Capex Cost) provided by the SIDCL</b>				
		<b>Amount in FEC (USD)</b>	<b>36% Taxes for Buses and ITS (PKR)</b>	
1	12 m Diesel Hybrid Buses (20 Nos.)	3,110,600	179,170,560	Cost of 1 bus = USD 155,000/ as per the financial bid opened by SIDCL (Letter SIDCL/GLBRTS/COO/2020/8010 dated 3rd November 2020)
2	IITS (Hardware + Software + Taxes @ 30%)	2,377,977	60,636,306	Procurement for IITS hardware and software including taxes to be undertaken under this head.
	<b>Total (A)</b>	<b>5,488,577</b>	<b>239,806,866</b>	
	<b>Total (A) in PKR</b>	<b>1,117,979,260</b>		
	<b>(OPEX COST)</b>	<b>PKR</b>	<b>Amount in PKR (3 years)</b>	
	<b>Bus Ops O&amp;M</b>	187,234,740	561,704,220	BRT operations are covered under this head. Fare revenue is calculated at an average Fare of PKR 22 per passenger. Non - Fare revenue is taken at 3% of the Fare Revenue because of fewer stations on the ASE BRT corridor. Ridership of ASE BRT: 24,225 passengers / day (analyzed by Consultants)
3	Total Revenue (Fare <sup>5</sup> + Non-Fare <sup>6</sup> )	172,915,628	518,746,884	
	Operations Deficit	14,319,112	42,957,336	
4	ITS Operations	11,230,000	33,700,000	ITS operations are covered under this head. Details provided in the cost estimates.
5	ITS Maintenance (2 yrs warranty + 1 year S&M)		44,000,000	Maintenance of ITS equipment is covered under this head.
6	Station Management	43,200,000	129,600,000	Expenditures related to security, cleaning and minor maintenance.
7	Operation Unit	20,000,000	60,000,000	Exclusive unit under SIDCL to look after BRT operations and maintenance
	<b>Total Subsidy Req. (B)</b>	<b>88,749,112</b>	<b>310,257,336</b>	
	<b>Total (A+B)</b>	<b>1,428,236,596</b>		
8	Add 2% Consultancy Charges (Design, Transaction, Legal and Operations Advisory)	28,564,732		Consultancy services required for designing integration and operationalization of the ASE BRT. Details provided in the cost estimates.
9	Add 2% Contingencies (Unforeseen/Hedging/Price Variation / Ancillary)	28,564,732		
	Add 2% Insurance of Government Asset (0.67% per year)	28,564,732		
10	Add 2% Establishment Charges of SIDCL	28,564,732		Administrative expenditures of the SIDCL establishment are covered under this head.
11	Improvement in Infrastructure (Physical Integration & Infrastructure Maintenance)	500,000,000		Cost of physical integration of ASE and Green BRT and annual maintenance of the ASE BRT dedicated corridor for 3 years
	<b>TOTAL</b>	<b>2,042,495,523</b>		
	<b>TOTAL Revised PC-1 Cost</b>	<b>4,295,662,042</b>		

1 USD = PKR 160

## **ANNEXURES**

# THE EXPRESS TRIBUNE

MONDAY, 14 DEC 2020 | TODAY'S PAPER | ADVERTISE



## TECHNOLOGY

Telenor accelerating digital transformation: A win-win



## OPINION

Reconstruction of not a failed idea but a society



## OPINION

A push for democracy in the Muslim world



## GILGIT-BALTISTAN

A tale of delivering relief to the most remote regions of Gilgit-

Annexure 01

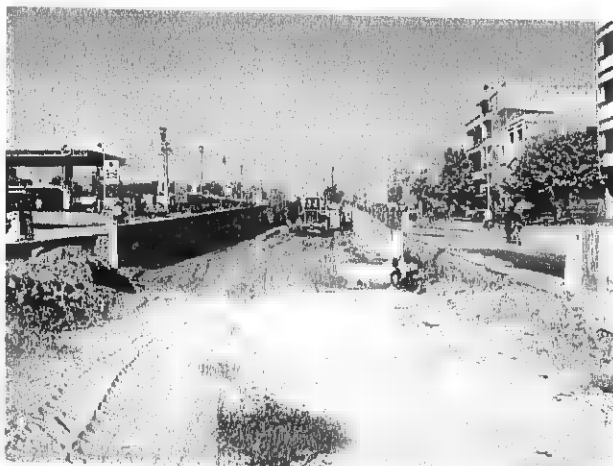
> [Sindh](#) > Karachi's Orange Line BRT Renamed After Edhi

## Karachi's Orange Line BRT renamed after Edhi

Move taken on directives of Bilawal, says Sindh transport minister

Photo Athar Khan/Our Correspondent

December 13, 2016



A view of the Orange Line BRT, which is currently under construction. It was named as 'Abdul Sattar Edhi Line' on Tuesday. PHOTO: ATHAR KHAN/EXPRESS

**KARACHI:** The Sindh government renamed on Tuesday an under-construction mass transit system after late philanthropist Abdul Sattar Edhi in recognition of his services to humanity.

The Orange Line Bus Rapid Transit (BRT) was named as 'Abdul Sattar Edhi Line' by the provincial transport minister, Nasir Hussain Shah, in a ceremony at the Matric Board Office interchange on Tuesday.

Edhi Foundation head and son of Edhi, Faisal Edhi, was also present on the occasion. He expressed gratitude to the provincial government for paying tribute to his father.

### Orange is the new BRT

According to the transport minister, the move was taken on the directives of Pakistan Peoples Party chairperson Bilawal Bhutto-Zardari to honour Edhi for the rescue, relief and welfare network

that he [Edhi] established across the country and offshore.

The Orange Line BRT project was inaugurated by former Sindh chief minister Qaim Ali Shah in June this year.

It will run from Orangi Town to the Board Office, from where it will join the Green Line BRT, which is also under construction, through a rotary flyover.

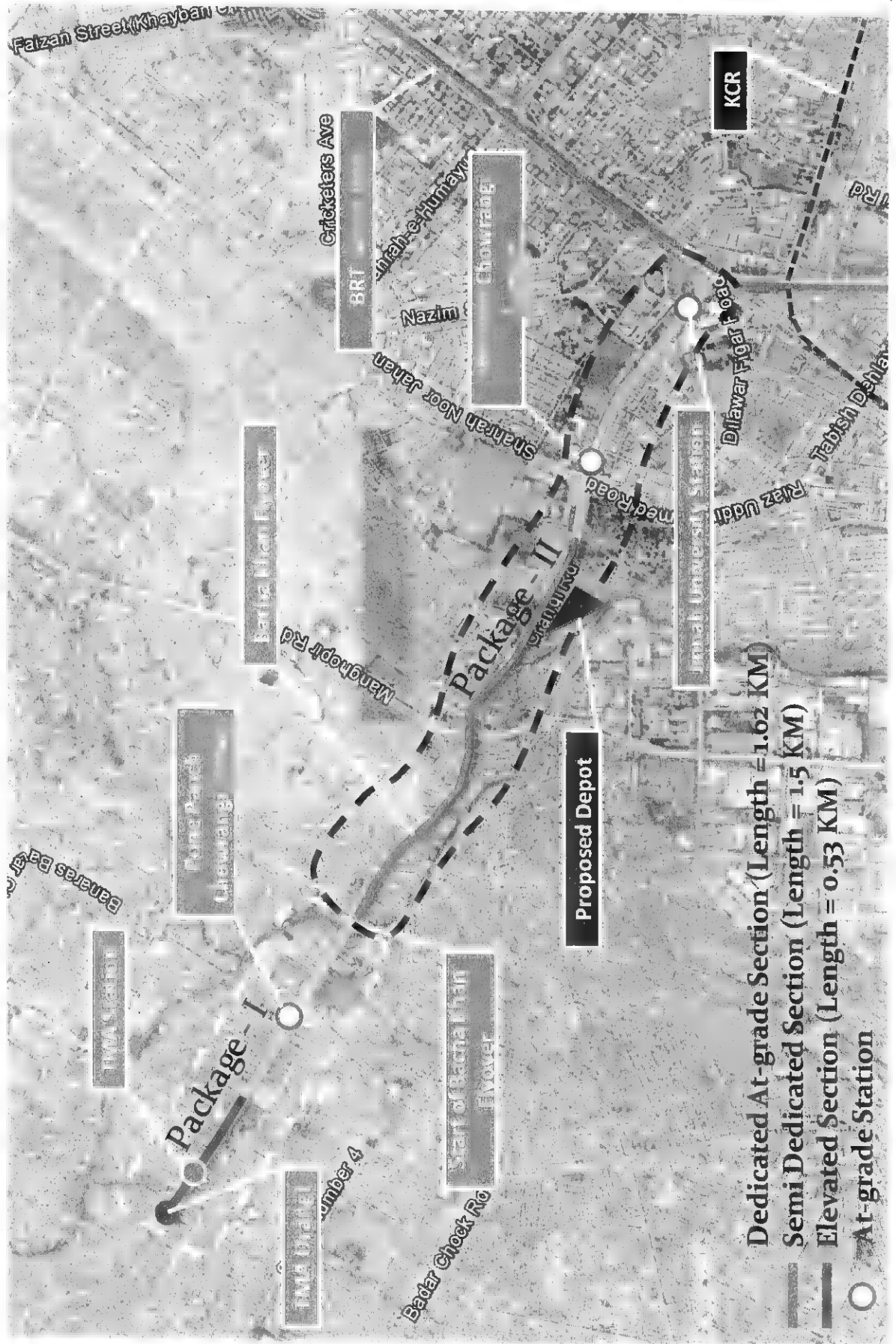
The 3.9-kilometre-long project costs Rs1.14 billion and has been funded by the provincial authorities.

*Published in The Express Tribune, December 14<sup>th</sup>, 2016.*



### RECOMMENDED STORIES

# Route Alignment of BRT Orange Line







SMTA ~~Act~~  
Notification

ANNEXURE D 3

37

GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT DEPARTMENT

Karachi Dated the 5th oct, 2017

154

**NOTIFICATION**

NO.SO(Gen)SMTA/TMTD/2017:-The Provincial Assembly of Sindh vide Notification NO. PAS/Legis-B-22/2014, the Sindh Mass Transit Authority Bill 2014 has been passed by the Provincial Assembly of Sindh on 29<sup>th</sup> September, 2016 and assented to by the Governor of Sindh on 06<sup>th</sup> October, 2016, published as an Act of the Legislature of Sindh 'THE SINDH MASS TRANSIT AUTHORITY ACT, 2014' SINDH ACT NO. XXIX OF 2016, to provide for the establishment of an Authority known as the "Sindh Mass Transit Authority" in the province of Sindh.

2. In pursuance of the provisions of Section 4 (1) of this Act, an Authority known as the Sindh Mass Transit Authority has been established in the province of Sindh for carrying out purposes of this Act.
3. The headquarters of the Authority shall be at Karachi and it may establish its offices at such place or places in Sindh as it may consider appropriate.
4. Subject to the provisions of this Act and the general directions and control of the Government, the Authority shall take such measures, discharge such powers and perform such functions as may be necessary for carrying out the purposes of this Act.
5. The general directions and administration of the Authority and its affairs shall be vested in the Board which may exercise all powers, perform all functions and do all acts and things which may be exercised, performed or done by the Authority.
6. The Sindh Mass Transit Authority shall remain under the Administrative control of Transport & Mass Transit Department, Government of Sindh.
7. All Employees shall perform all such functions / services as envisaged in the Sindh Mass Transit Authority (SMTA) Act 2016 under the Administrative Control of Transport & Mass Transit Department, Government of Sindh.

SAEED AHMED AWAN  
SECRETARY TO GOVERNMENT OF SINDH  
Karachi, dated the 5th oct 2017

NO. SO(Gen)SMTA/TMTD/2017:-

A copy is forwarded for information and necessary action to:-

1. The Chairman, Sindh Mass Transit Authority / Minister Transport & Mass Transit Department, Government of Sindh, Karachi.
2. The Principal Secretary to Governor Sindh, Karachi.
3. The Principal Secretary to Chief Minister, Sindh, Karachi.
4. Vice Chairman, Sindh Mass Transit Authority / Secretary Transport & Mass Transit Department, Government of Sindh, Karachi.
5. Administrative Secretaries (All), Government of Sindh.
6. Secretary (I&C), SGA&CD
7. Accountant General, Sindh, Karachi.
8. Director General / Managing Director, Sindh Mass Transit Authority.
9. The Deputy Secretary (Staff) to Chief Secretary.



(GHULAM FAROOQ MANGRIO)  
SECTION OFFICER (General)  
For Secretary to Government of Sindh

SMTA Board

ANNEXURE 03



**GOVERNMENT OF SINDH  
SERVICES, GENERAL ADMINISTRATION &  
COORDINATION DEPARTMENT**

Karachi, dated the 17<sup>th</sup> November, 2017.

**NOTIFICATION**

**NO:SO(C-IV)SGA&CD/4-13/15** In pursuance of the Section 12 (1) & (2) of the Sindh Mass Transit Authority Act, 2014, Government of Sindh are pleased to notify the Board of the Sindh Mass Transit Authority, which may exercise all powers, perform all functions and do all acts and things as authorized by the Authority. The Board shall comprise of the following:-

1.	Minister, Transport & Mass Transit Department, Government of Sindh	Chairperson
2.	Mayor/ Administrator, Karachi.	Member / Co-Chairperson
3.	Mayor/ Administrator, Hyderabad.	Member / Co-Chairperson
4.	Mayor/ Administrator, Sukkur.	Member / Co-Chairperson
5.	Secretary, Transport & Mass Transit Department, Government of Sindh	Vice Chairperson
6.	Secretary, Finance Department, Government of Sindh or his nominee (not below the rank of Additional Secretary)	Member
7.	Secretary, Planning & Development Department or his nominee (not below the rank of Additional Secretary)	Member
8.	Director General, Public Private Partnership Unit, Finance Department, Government of Sindh.	Member
9.	Additional Inspector General of Police (Traffic), Sindh.	Member
10.	Managing Director, Sindh Mass Transit Authority.	Member
11.	Engineer Mukhtar A. Shaikh, Vice Chairman (Sindh), Pakistan Engineering Council.	Non-official Member
12.	Director, Military Lands & Cantonments.	Official Member
13.	Architect Asad I.A. Khan, Chairman, Pakistan Council of Architects & Town Planners.	Non-Official Member

2) The Board of Sindh Mass Transit Authority shall function in accordance with Sections 12 (3) to 12 (8), 13, 14 & 15 of Sindh Mass Transit Authority Act 2014.

**-RIZWAN MEMON-**  
CHIEF SECRETARY SINDH

**NO:SO(C-IV)SGA&CD/4-13/15**

Karachi, dated the 17<sup>th</sup> November, 2017.

Copy is forwarded for information & necessary action to:-

- 1) The Chairman, Planning & Development Board, Government of Sindh, Karachi.
- 2) The Senior Member, Board of Revenue, Sindh, Karachi.
- 3) The Principal Secretary to Governor Sindh, Karachi.
- 4) The Principal Secretary to Chief Minister Sindh, Karachi.
- 5) The Administrative Secretaries (all), Government of Sindh.
- 6) The Commissioners (all) in Sindh.
- 7) The Deputy Commissioners (all) in Sindh.
- 8) The Chairperson/Co-Chairperson / Members (all) of the Board.
- 9) The Deputy Secretary (Staff) to Chief Secretary Sindh.
- 10) The P.S. to Chief Secretary Sindh, Karachi.
- 11) The P.S. to Secretary (I&C), SGA&CD.
- 12) Master file.

**(ALTAH HUSSAIN)**  
SECTION OFFICER (C-IV)





SPECIAL PROJECT MANAGEMENT UNIT (GREEN LINE BRTS)  
MINISTRY OF COMMUNICATIONS  
GOVERNMENT OF PAKISTAN  
6<sup>th</sup> Floor, Extension Block, Bahria Complex IV, Gizri, Karachi  
Tel: 021-35155101  
[info@greenline.gov.pk](mailto:info@greenline.gov.pk); [www.greenline.gov.pk](http://www.greenline.gov.pk)

ANNEXURE 04

279

SIDCL  
incorporation

No. SPMU (GLBRTS)/2015/103  
Dated, 5<sup>th</sup> June, 2015

PA to Deputy Secretary (Staff)  
to Chief Secretary, Sindh  
Dairy No: 182/  
Inward Date: 11/6/15

The Secretary  
Transport & Mass Transit Department  
Government of Sindh  
Karachi.

Subject: Incorporation of a Limited Liability Company under Companies Ordinance 1984 to Execute Green Line Bus Rapid Transit System Karachi (BRTS) on Fast Track Basis

Dear Sir,

I am directed to intimate that with approval of the Prime Minister, "Karachi Infrastructure Development Company Limited (KIDCL)" – a wholly owned subsidiary of Government of Pakistan, has been incorporated as a Public Limited Company under Section 42 of the Companies Ordinance 1984 to undertake Green Line BRTS Project, on fast track basis. Mr. Sualeh Ahmed Faruqi has been designated as the Chief Executive Officer of the Company.

2. Accordingly, KIDCL under the Ministry of Communications has succeeded the Special Project Management Unit (SPMU), having its registered office at 6<sup>th</sup> Floor, Extension Block, Bahria Complex IV, Gizri, Karachi.

3. Submitted for information, please.

2-39-  
12.6.2015  
GOVT. DEPT.

7/17/15

DS

(Bilal Ahmed Memon)  
Director (SPMU - Green Line BRTS)

Copy for information to:

- ✓ Deputy Secretary (Staff) to the Chief Secretary, Government of Sindh, Karachi;
- PA to the Project Director, SPMU-Green Line (BRTS)/CEO-Designated.

DS

See Transport



Summary No. 100

ANNEXURE 05

GOVERNMENT OF SINDH

TRANSPORT &amp; MASS TRANSIT DEPARTMENT

Karachi, Dated 17<sup>th</sup> October 2020**SUMMARY FOR CHIEF MINISTER, SINDH****SUBJECT: ORANGE LINE BRTS PROJECT - FACILITATION AND IMPLEMENTATION AGREEMENT**

32. A meeting held on 28 October 2020 at Secretary, Finance office and it was decided in the meeting that the following changes shall be incorporated by Transport & Mass Transit Department in the 'Facilitation and Implementation Agreement for BRTS Orange (The Agreement).

ARTICLE 3 SECTION 1	GoS is taking over financial liabilities and pending litigations (if any) arising during last six months of SIDCL operations Terms	This has been amended 3 years liability is on SIDCL side
ARTICLE 4 SECTION 6	GoS is assuming demand risk during SIDCL Operation Term	No Change
ARTICLE 8	GoS is to bear obligation for taxes (related to operating activities) arising during SIDCL Operations Term	No Change

33. TMTD has amended the draft in Article 2 Section wherein SIDCL will accept all financial liabilities or any pending litigations during its project term - e 3 years period time. Whereas, Article 4 and Article 8 remain same (**Annexure-I**).

34. Hon'ble Chief Minister, Sindh may kindly pass orders on para 32 & 33 above.

*(Signature)*  
(SHARIQ AHMED)

SECRETARY TO GOVERNMENT OF SINDH

35. Chairman P&D

Matter is pending for quite some time which has to be resolved early otherwise operation of Orange line may be delayed. Paras 32 & 33/n may be considered for approval.

36. Chief Secretary, Sindh

37. Chief Minister, Sindh

As at para 35.

*(Signature)*  
for Transport

22/11/20 124

*(Signature)*

22/11/20

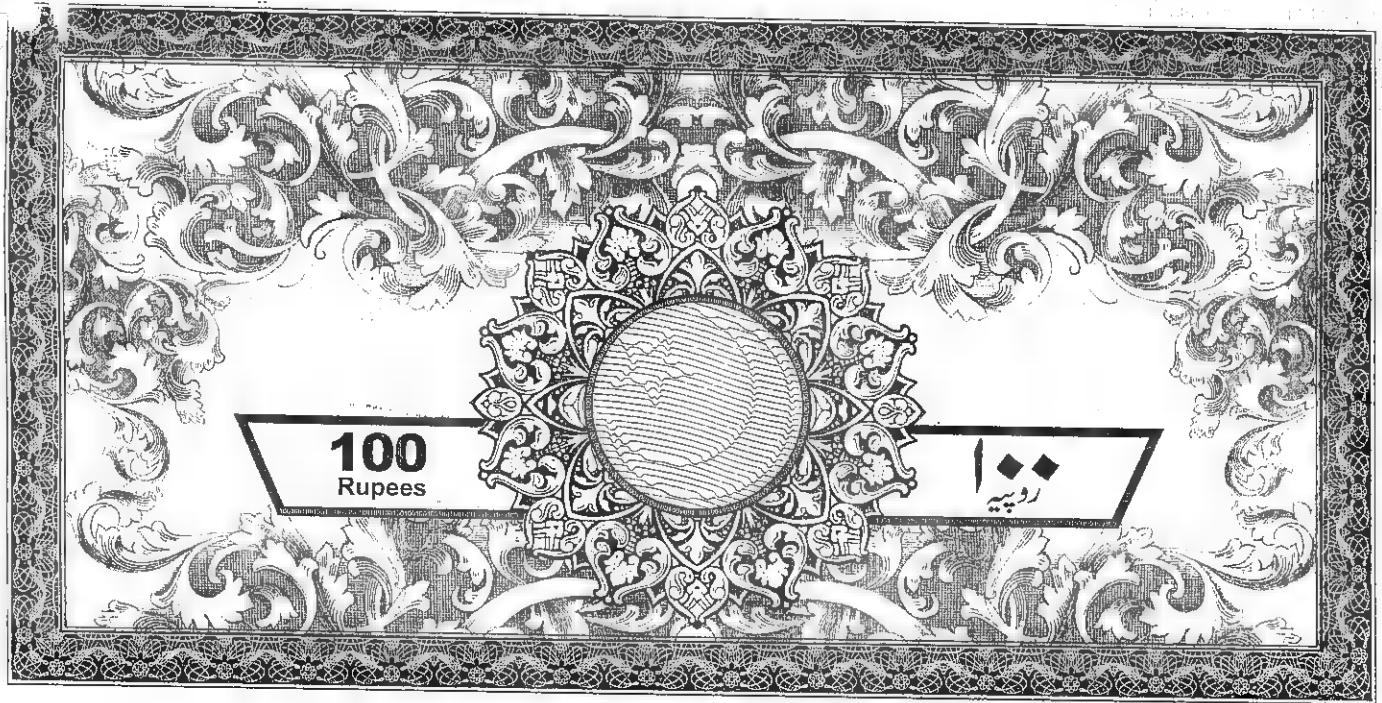
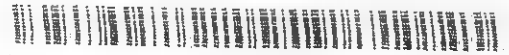
23/11/2020

no. for chairman, P&D/Sum/Note  
Inward # 290 Dated 18-11-2020  
Outward # 290 Dated 18-11-2020

18/11/2020

SUMMARY SECTION  
C.M.'S OUTWARD NO. 2431  
DATE 23.11.2020





**RAZ AHMED STAMP VENDOR**

Office # 160, Shop # 58, SITE Market  
 Bib Bank Chowringh, S.I.T.E., Karachi

JED 30098

OUGH

POSE

IE RS

MP VENDOR

Stamp paper is not valid for Divorce and Free Will purpose

**M. Javed**  
**Advocate**  
 Lr No: 4103

**14 NOV 2020**

**RUPEES ONE HUNDRED**

## **FACILITATION AND IMPLEMENTATION AGREEMENT - ORANGE (ABDUL SATTAR EDHI) LINE BRTS**

This Facilitation and Implementation Agreement ("Agreement") is made on Friday 27<sup>th</sup> day of November 2020.

### **BETWEEN**

GOVERNMENT OF SINDH, acting through the Secretary, Transport and Mass Transit Department, having its office at Tughluq House, 2nd Floor, Kamal Atta Turk, Court Road, Karachi, hereinafter referred to as the ("GOS") for and on behalf of the Government of Sindh.

### **AND**

SINDH INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED MINISTRY OF PLANNING, DEVELOPMENT AND SPECIAL INITIATIVES (FORMERLY KARACHI INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED), a company incorporated under the laws of Pakistan and having its registered address at 6th Floor, Ext. Block, Bahria Complex IV, Gizri, Karachi, hereinafter referred to as ("SIDCO").

**Chief Executive Officer**  
 Sindh Infrastructure Development Co Ltd.  
 Cabinet Division  
 Government of Pakistan

*[Signature]*  
 SECRETARY  
 TRANSPORT AND MASS TRANSIT  
 DEPARTMENT  
 GOVERNMENT OF SINDH  
 KARACHI

①

The GoS and SIDCL are hereinafter referred to individually as a "Party" and collectively as the "Parties" and in each case shall include its respective successors and assignors.

#### GENERAL:

- A) Pursuant to the 18th Amendment to the Constitution of Pakistan, 1973 ("Constitution"), it is the mandate of the GOS as a Provincial Government under the Constitution to provide a system of public transportation and infrastructure in the Province of Sindh, which includes the city of Karachi.
- B) In this regard, the GOS is desiring to operate and maintain the existing infrastructure facility of the Orange Line BRTS system and synchronize its integration with Green Line BRTS system within the city of Karachi, thereby meet the increasing demand for public transportation of the general population of Karachi, by providing the public with a more efficient, cost-effective and reliable means of transportation.

In relation to the same, pursuant to the Japan International Cooperation Agency (JICA) Study carried out in 2012, which advocated and set out the parameters for a comprehensive system/master plan for public transportation and infrastructure in the city of Karachi by the name of "Karachi Transportation Improvement Project", GOS requested GOP to construct the BRTS "Green Line" and upon such construction to transfer the infrastructure to GOS, with the bus operations and integrated intelligent transport system and services ("IITS") component to be the responsibility of the GOS (as defined hereunder). The GoS and SIDCL have entered into a Facilitation and Implementation Agreement dated 20<sup>TH</sup> May, 2020 in respect of the Green Line BRTS system.

- C) Further to the above, GOS has mandated SIDCL to launch, operate and maintain the "Orange Line" BRTS operations, as per the route map attached hereto as Schedule 1 ("**Project**") under an arrangement for an overall period of ten (10) years ("**Project Term**"), for which the contractual responsibilities and obligations of SIDCL will be taken over and novated in favour of GOS at the end of a period commencing from [.] to [.] (SIDCL Operations Term) similar to the Green Line BRTS system for SIDCL Operations Term.

The Sindh Mass Transit Authority, Transport & Mass Transit Department requested SIDCL to undertake "Orange Line" BRTS operations vide letter No. SMTA/BUSOPS/OL-GL/1555 dated 5<sup>th</sup> September 2019 to SIDCL (**Annex-A**). Pursuant to the aforesaid letter, funding for the Orange Line BRTS Operations and Maintenance for the SIDCL Operations Term for bus transport services (Fleet, IITS, Station Management, O&M etc) in the city of Karachi was approved to be provided by GOS to SIDCL.

- D) Accordingly, SIDCL shall float the tender(s) for the bus/fleet procurement, bus operator, station management services, IITS, fund management and any other related services for the Project as may be deemed necessary under Requests for Proposal ("RFPs"), enter into agreements/ services contracts with selected bidders ("Project Contracts") for the tender(s) under the RFP(s), as well as enter into arrangements for the operation and maintenance of the Operations Control Center ("OCC") with various third parties, as may be required as per the mandate provided by GOS under this

Transport & Mass Transit Department  
Government of Sindh  
Karachi

Chief Executive Officer  
Sindh Infrastructure Development Co Ltd.  
Cabinet Division  
Government of Pakistan

2

Agreement and that the Project Contracts will be novated in favour of GOS at the end of the SIDCL Operations Term for the remaining period of the Project Term.

- E) On the basis of the above, the Parties agree and acknowledge that in order to make the Project viable, to ensure and secure the interests of prospective bidders under the RFPs and to enable SIDCL to undertake the implementation of the Project, SIDCL requires the undertakings, facilitation, approvals and assurances from GOS in relation to the Project well within time, in order to undertake the implementation of the Project, which will also in turn be given to the selected bidder(s)/ third parties under the Project Contracts and OCC Agreement.

## ARTICLE 1: DEFINITIONS AND INTERPRETATION

### 1.1 Definitions

Whenever the following words and expressions appear in the Agreement or in the Schedules to this Agreement, these words and expressions shall, unless the context otherwise requires, have the meanings stated below;

**"Agreement"** shall mean this Facilitation and Implementation Agreement.

**"AFC"** shall mean automated fare collection.

**"Business Day"** shall mean any day that banks in Pakistan are legally permitted to be open for business, as well as when offices of the GOP are open and functioning.

**"Commercial Operations Date"** shall mean the Day immediately following the date on which the Project becomes operational/ is commissioned.

**"Consents"** shall mean any and all approvals, consents, authorizations, notifications, concessions, acknowledgements, agreements, licenses, permits, decisions or similar items which may be required to be obtained from a Relevant Authority, in terms of the Project Contracts

**"Constitution"** shall mean the Constitution of Pakistan, 1973.

**"Day"** shall mean a continuous period of twenty-four (24) hours beginning at 12:00 midnight and **"Daily"** shall be construed accordingly.

**"Effective Date"** shall mean the date on which the Parties execute this Agreement.

**"GOP"** shall mean Government of Pakistan.

**"ITS"** shall mean integrated intelligent transport system and services.

**"Laws of Pakistan"** shall mean federal, provincial and local laws of Pakistan, and all orders, rules, regulations, statutory regulatory orders, executive orders, decrees, judicial decisions, notifications, or other similar directives issued by any public-sector entity pursuant thereto, including the environmental standards, as any of them may be amended from time to time.

Transport & Highways Department  
Government of Sindh  
Karachi

3

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Chief Executive Officer  
Sindh Infrastructure Development Co Ltd.  
Cabinet Division  
Government of Pakistan



**"OCC"** shall mean the Operations Control Center for the Project.

**"OCC Agreement"** shall mean Agreement related to Operations Control Center.

**"Pakistan"** shall mean the Islamic Republic of Pakistan.

**"Party" or "Parties"** shall have the meaning ascribed thereto in the Preamble.

**"Project"** shall have the meaning ascribed thereto in Recital C.

**"Project Contracts"** shall mean the various agreements and services contracts to be entered into between SIDCL and the selected bidder(s) in connection with the procurement of buses/fleet, bus Operations, station management services, fund management / clearing house services, IITS, OCC Operations and any other related services as may be deemed necessary under the RFPs.

**"Project Term"** shall mean a period of ten (10) years commencing from the Commercial Operations Date.

**"Relevant Authority"** shall mean the department, authority, instrumentality, agency or other relevant entity of GOS from which a Consent is to be obtained and any authority, body or other Person having jurisdiction under the Laws of Pakistan which falls within domain of GOS with respect to the Project or any part thereof, as the case may be.

**"RFPs"** shall mean requests for proposal to be floated by SIDCL for the implementation of the Project. It includes joint RFPs floated by SIDCL for procurement of buses/fleet, procurement and operations of Green and Orange Line for the project term.

**"Route"** shall mean the route of the Project, as set out in Schedule 1 hereto.

**"ROW"** shall mean right of way as provided for in Article 2 below.

**"SIDCL"** shall have the meaning ascribed thereto in the Preamble.

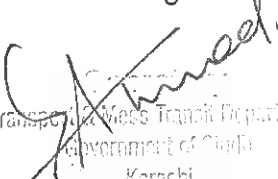
**"SIDCL Operations Term"** shall mean a period of three (3) years commencing from date \_\_\_\_\_[.].

**"SMTA"** shall mean the Sindh Mass Transport Authority established under the Sindh Mass Transit Authority Act, 2014.


## 1.2 Rules of Interpretation.

(a) In this Agreement, headings are only for convenience and shall be ignored in construing this Agreement and the singular includes the plural and vice versa:

(b) References to Articles are, unless the context otherwise requires, references to Articles to this Agreement;

  
Transport Minister  
Government of Sindh  
Karachi

(4)

  
Chief Executive Officer  
Sindh Infrastructure Development Co Ltd  
Cabinet Division  
Government of Pakistan

(c) In carrying out its obligations and duties under this Agreement, each Party shall have an implied obligation of good faith;

(d) A reference to any legislation or legislative provision includes any reference to statutory modification or re-enactment of, amendment to or legislative provision substituted for, and any subordinate legislation under, that legislation or legislative provision; and

(e) Reference to any document, instrument or agreement are references to that document, instrument or agreement as amended, consolidated, supplemented, novated or replaced from time to time.


## ARTICLE 2: ROUTE AND ROW

GOS agrees and confirms that the Route for the Project shall be as annexed at Schedule I hereto and that GOS shall make available the ROW, free from all liens, charges, encumbrances, liabilities or the like, of whatsoever nature, in relation to the Route for the Project since the land required for the ROW is owned by GOS. For any ROW passing through privately owned land, GOS shall acquire and own such land directly and assign, through the Agreement, to the SIDCL for the SIDCL Operations Term.


## ARTICLE 3: MANDATE.

1. GOS confirms and agrees that it has given the mandate to SIDCL to implement the Project based on the RFPs and Project Contracts for the Project Term and for SIDCL to manage the operations & maintenance of the Project for the SIDCL Operations Term, after which it is confirmed and agreed that the Project Contracts shall be novated in favor of GOS, such that all the rights, responsibilities and obligations of SIDCL under the Project Contracts and OCC Agreement shall be taken over and vest in their entirety in favor of GOS. Upon such transfer SIDCL shall be relieved of all obligations assigned or transferred to and assumed by the GoS under the Project Contracts.
2. GOS shall appoint an authorized representative with regard to oversee the process of implementation of the Project(s), who shall serve as the focal person for GOS for the Project, and notify to SIDCL commencing from the Effective Date and agrees to communicate any feedback/ input to SIDCL within the agreed reasonable timeframe. Notwithstanding the same, GOS undertakes, agrees and confirms that it shall not contest any decisions and actions taken by SIDCL in relation to the project during the SIDCL Operations Project Term, except the decisions and action pertaining to regulations and policy matters in good faith until the Project Contracts have been novated in favor of GOS.
3. The GoS may appropriately arrange for the requisite funding for procurement of buses and operations of Orange Line BRTS (including making payments under Project Contracts), and may consider revising the PC-I of Orange line BRTS, to include the following:

Establishment Charge of SIDCL amounting 2% of the Project Cost and 2% of the Project Cost for the Operations Unit;

  
Chief Executive Officer  
Sindh Infrastructure Development Co. Ltd.  
Karachi

(5)

  
Chief Executive Officer  
Sindh Infrastructure Development Co. Ltd.  
Cabinet Division  
Government of Pakistan

- ii- Funding covering fleet/buses procurement, IITS, O&M, Station Management and Clearing House shall be covered in the revised scope of PC-Is;
  - iii- Routine and Periodic Infrastructure Maintenance; and
  - iv- Operations Deficit, Insurance Cover, Provision of Taxes and other administrative expenses for the Project.
4. GoS shall pay to SIDCL the costs and other charges relating to procurement in three tranches.
- a. 110% of the estimated contract price under the Project Contracts (including the LC amount) for the procurement of fleet/buses and IITS in the first tranche in the designated account of the National Bank of Pakistan by 1<sup>st</sup> Quarter FY 2020-21. A joint LC for Green and Orange Line procurements shall be established for USD payments under the Project Contracts.
  - b. The second tranche will be due on procurement of O&M, Stations Management, Clearing House and Periodic Infrastructure Maintenance for 42 months.
  - c. The 3rd Tranche covering operations deficit for 42 months shall be released within three (3) months of the 2<sup>nd</sup> Tranche.
5. Besides estimated costs for procurement and operations, GoS shall pay SIDCL, on demand, any actual charges for the Orange Line BRTS' procurement and operations, including increase in price under Project Contracts due to variation, taxes and insurance charges.
6. SIDCL may elect to issue notice to proceed under the relevant Project Contracts only after GoS has deposited relevant funds in the designated account of the National Bank of Pakistan. The aforesaid designated account maintained by SIDCL with the National Bank of Pakistan shall be an escrow account. SIDCL and GoS shall additionally enter into an escrow agreement (in line with the terms and conditions for funding under this Agreement) in relation to, *inter alia*, the obligations of: (i) the GoS to deposit the funds into the designated escrow account; and (ii) the SIDCL for utilization of amounts in the designated escrow account for the establishment of the LC and making payments under the relevant Project Contracts.
- For the on-going consultancies (Bus operations and IITS), GoS shall pay the amount related to Orange line (Bus procurement, Bus operations, IITS and Station Management).

#### ARTICLE 4: SALIENT PROJECT TERMS

1. The Parties agree that cost of procurement of fleet/buses and IITS related to the Project will be borne by GoS.
2. The risks related to the procurement and compliance with the applicable Public Procurement Rules and Regulations shall be the sole responsibility of SIDCL, GoS

Chief Executive Officer  
Sindh Infrastructure Development Co Ltd  
Cabinet Division  
Government of Pakistan

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shall not be responsible for any matter of accountability surfaced before, during or after the conclusion of the Operations Term.

3. The Parties agreed that the following will be the applicable terms relating to the main aspects of the Project for the Project Term: -
1. The bus operator will:
    - a. operate and maintain the buses for the Project;
    - b. equip, operate and maintain the bus depots; and
    - c. procure the on-board fleet equipment as per the IT specifications.
  2. The IITS/AFC provider will:
    - a. procure, supply, operate and maintain the IITS system;
    - b. undertake and provide station management services, including cleaning, maintenance and provision of security.
    - c. procure, supply, operate and maintain the AFC automated fare collection system;
    - d. supply, operate and maintain the IT system;
    - e. procure and supply call center equipment, as well as operate and manage the call center; and
    - f. operate and maintain the OCC building and space utilization by and under SIDCL's management
  3. The clearing house shall:
    - a. provide fund management services;
    - b. auditing of revenues;
    - c. provide escrow account services; and
    - d. distribution of funds to relevant entities to whom such funds are due as per terms and conditions agreed to with the bus operator, IITS provider and clearing house.
  4. Before the start of the SIDCL Operations Term, an inventory list shall be prepared jointly with the GoS (or third-party validation) and be ensured in acceptable working condition at the time of novation in favor of GoS. Infrastructure maintenance related to operations will be undertaken by SIDCL during the SIDCL Operations Term, which includes routine and periodic/ preventive maintenance as well as rehabilitation of the road infrastructure of the Project, including bus ways and elevated structures and Bus Stations. Upon completion of the SIDCL Operations Term and for the remaining Project Term, the responsibility and liability for infrastructure maintenance shall rest solely with GOS till the completion of Project Term.
  5. Utilization of area within the OCC shall be under the mutual mandate of SIDCL and the GoS to the extent of BRT's Operations. OCC management and maintenance shall be with SIDCL for the period of the SIDCL Operations Term, which may be transferred to GoS at the end of the SIDCL Operations Term or another GOS nominated entity, as required.
  6. Collection of fare revenues and other revenues from bus operations will be automatically transferred to central escrow bank account. SIDCL will assume ownership of the central escrow bank account till the completion of SIDCL Operation Term. Till SIDCL Operation Term, SIDCL will pay to the service providers under the Project Contracts from

Secretary  
Transport & Mass Transit Department  
Government of Sindh  
Karachi

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Chief Executive Officer  
Sindh Infrastructure Development Co Ltd  
Cabinet Division  
Government of Pakistan

fare revenues collected. In case of under-recovery, GoS will be responsible to finance the outstanding payments of the contractors (in accordance with Article 3 (Mandate) above) subject to reasonable documentation to justify the claim. In case of over-collection, the remaining balance of central bank account will be attributed to GoS on novation of the Project to GoS on completion of SIDCL Operations Term. Following SIDCL Operation Term, all rights and obligations of the central bank account will be transferred to GoS. It is clarified that demand risk shall be assumed by the Government of Sindh for Orange Line BRTS' operations.

7. Advertising and revenues from other commercial activities shall be under the sole mandate of SIDCL for revenue collection and distribution during the SIDCL Operations Term. GoS shall assist SIDCL to get necessary/required NOC(s) to SIDCL.

8. It shall also be the mutual mandate of SIDCL and the GoS to launch and implement direct, feeder and other special services under the purview of the Project.

9. The Monitoring & Evaluation (M&E) criteria to supervise the performance of counter parties of SIDCL in Project Contract shall be in compliance with the criteria as mentioned in the RFP / Service Level Agreement for the procurement of the services under Project Contracts. Also, an independent / third party monitoring and evaluation and audit firm shall be procured to conduct such periodic monitoring, evaluation and reporting of operational performance and financial statements.

10. Parties to this Agreement shall have the legal authority to enter into the arrangement on behalf of their respective Governments as per law.

#### **ARTICLE 5: REPRESENTATIONS AND WARRANTIES**

Both Parties acknowledge, agree and confirm that they have the requisite authority, consents and approvals to enter into and perform their respective obligations under this Agreement, and to discharge their respective responsibilities and liabilities hereunder in good faith of the Project.

#### **ARTICLE 6: CONSENTS**

GOS also confirms that it shall use its good offices to make available the grant of all Consents in a timely manner, as may be required from time to time, to ensure that the implementation of the Project is achieved within the required timelines. In case of any loss of SIDCL Period owing to consents, no liability or responsibility shall lie upon the GOS.

#### **ARTICLE 7: INDEMNITY**

The Parties irrevocably and unconditionally undertakes to indemnify each other against any and all costs, losses, damages, actions, suits, proceedings, accounts, claims, penalties, payments, liabilities, dues, demands and/ or objections suffered or caused during the SIDCL Operational Term, unless such claim, damage, loss, expenses or cost arise from fraud wilful misconduct, bad faith to reckless disregard of duties on the part of other Party during SIDCL period.

  
Secretary  
Transport & Mass Transit Department  
Government of Sindh  
Karachi

(8)

  
Chief Executive Officer  
Sindh Infrastructure Development Co Ltd.  
Cabinet Division  
Government of Pakistan

## ARTICLE 8: TAXES

All applicable government taxes in relation to the Project shall be borne by GoS and (where applicable) paid to SIDCL in accordance with Article 3 (*Mandate*), for the SIDCL Operations Term as well as thereafter for the remaining Project Term, provided that in the event that there are any tax refunds, adjustments and/or tax credits in respect of the Project in relation to the operation of the Project during the SIDCL Operations Term, which for all intents and purposes are for the benefit of SIDCL and the same remain unpaid, outstanding and/ or are not adjusted in favor of SIDCL during the SIDCL Operations Term, then these amounts shall be payable by GOS to SIDCL at the time of novation of the Project Contracts in favor of GOS.

## ARTICLE 9: ENTIRE AGREEMENT

This Agreement (including the documents and instruments mentioned herein) constitutes the entire agreement between the Parties With respect to its subject matter and supersedes all prior agreements and undertakings, both written and oral, between the Parties in respect to the subject matter hereunder.

## ARTICLE 10: NOTICES

(a) All notices or other communications to be given or made hereunder shall be in writing, shall be addressed for the attention of the persons indicated herein below, and shall either [-] be delivered personally or sent by courier, registered or certified mail or facsimile. The addresses for service of the Parties and their respective facsimile numbers shall be:

(i) If to the GOS:

Attn: Secretary, Transport and Mass Transit Department  
Address: 2<sup>nd</sup> Floor Tulghaq House, Sindh Secretariat.  
Facsimile: 021-99211017

(ii) If to SIDCL:

Attn: Chief Executive Officer  
Address: Sindh Infrastructure Development Company Limited  
6<sup>th</sup> Floor, Ext. Block, Bahria Complex IV, Gizri. Karachi  
Facsimile: + 92 (21) 35155102

(b) All notices shall be deemed delivered (i) when presented personally, (ii) if received on a Business Day for the receiving Party, when transmitted by facsimile to the receiving Party's facsimile number specified hereinabove and. if received on a Day that this is not a Business Day for the receiving Party, on the first Business Day of the receiving Party following the date transmitted by facsimile to the receiving Party's facsimile number specified hereinabove, (iii) two (2) Days after being delivered to a courier for overnight delivery, addressed to the receiving Party, at the address indicated hereinabove, or such other address as the receiving Party may have specified by written notice delivered to the delivering Party at its address or facsimile number specified above. Any notice given by facsimile shall be confirmed in writing delivered personally or sent by registered or certified mail, but the failure to provide such confirmation shall not void or invalidate the original notice if it is in fact received by the Party to which it is addressed.

Secretary  
Transport & Mass Transit Department  
Sindh Secretariat  
Karachi

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Chief Executive Officer  
Sindh Infrastructure Development Co. Ltd  
Cabinet Division  
Government of Pakistan

(c) Any Party may by a written notice change the addressee and/or address to which such notices and communications to it are to be delivered or mailed.

#### **ARTICLE 11: TERM AND COMPLETION**

This Agreement shall become effective immediately upon the Effective Date, and shall, continue in full force and effect for completion of SIDCL Operation Term and up to the successful novation of the Project Contracts in favor of GOS.

#### **ARTICLE 12: GOVERNING LAW AND JURISDICTION**

This Agreement and the rights and obligations of the Parties hereunder shall be governed by and construed in accordance with the Laws of Pakistan. The competent courts of Pakistan shall have jurisdiction in all matters relating to the Agreement.

#### **ARTICLE 13: AMENDMENT**

This Agreement can be amended only by agreement between the Parties in writing, executed by a duly authorized representative of each of the Parties.

#### **ARTICLE 14: DISPUTE RESOLUTION**

If a dispute arises in respect of this Agreement, the Parties shall act in good faith and use reasonable endeavours to resolve the dispute.

#### **ARTICLE 15: ARBITRATION**

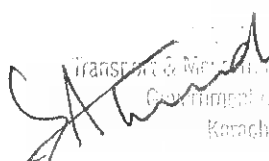
Any dispute arising out of or in connection with this Agreement shall be settle amicably by negotiation between both the parties in good faith and in case of failure of amicable settlement, the dispute shall be referred to the arbitrators in accordance with the Arbitration Act, 1940.

#### **ARTICLE 16: FORCE MAJEURE**

Neither party shall be liable for failure or delay or in the performance of its obligation under this Agreement due to causes beyond its control including but not limited to act of God, strikes, wars, revaluations, fires, floods, explosions, terrorist, earthquakes, civil commotion, revolutions or pandemic.

#### **ARTICLE 17: PROCESS OF HANDING OVER PROJECT**

1. On completion of SIDCL Operation Term, all the assets and records (including financial and non-financial records) of the Project and the Project Contracts will be assessed by a third party evaluator and/or auditor (the **Evaluator**), hired by the GOS, at the cost of central escrow bank account, six months before the SIDCL Operations Term ends.
2. It is hereby agreed that the Parties shall, with the assistance of the Evaluator, develop the detailed handing over process with list of Project Assets and required condition of the Project Assets and required timelines of the handing over process.

  
Transport & Infrastructure Minister  
Government of Sindh  
Karachi

(10)

  
Chief Executive Officer  
Sindh Infrastructure Development Co. Ltd  
Cabinet Division  
Government of Pakistan

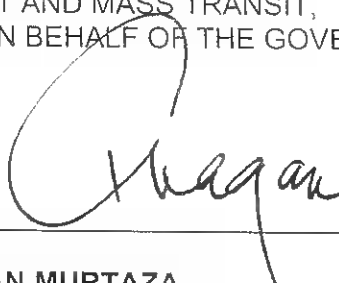
3. The Evaluator will perform the stock counting and evaluation of condition of project assets and records. The Evaluator shall assess the condition of the asset and record to make sure the conditions of project assets is in compliance with the requirement of the project contracts. In case as a result of such assessment if it is determined that there is a liability, then the same shall be charged upon the Central Escrow Account for rectification. The ownership of the central escrow account shall be transferred to GoS and all amounts in that account shall be transferred to SIDCL after deduction of all the liabilities related to the Project. At the conclusion of SIDCL Operations Term, the Central Escrow Account and the Project shall be free from all charges or obligations.

IN WITNESS WHEREOF, the Parties have entered into this Agreement as of the date first hereinabove written.

For and on behalf of:

  
Transport & Mass Transit Department  
Government of Sindh  
Karachi

**MR. SHARIQ AHMED**  
SECRETARY,  
TRANSPORT AND MASS TRANSIT,  
FOR AND ON BEHALF OF THE GOVERNMENT OF SINDH

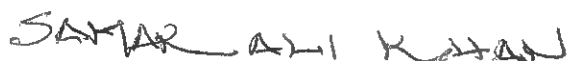
  
Chief Executive Officer  
Sindh Infrastructure Development Co Ltd  
Cabinet Division  
Government of Pakistan

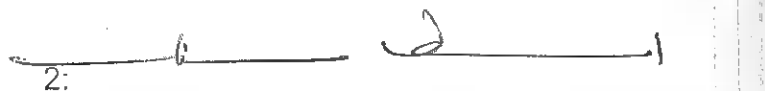
**MR. KHAQAN MURTAZA,**  
CHIEF EXECUTIVE OFFICER,  
SINDH INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED

Witness:

  
1: \_\_\_\_\_

On behalf of SIDCL



  
2: \_\_\_\_\_  
MUHAMMAD WASEEM, **Chairman**  
CHAIRMAN,  
P & D BOARD,  
GOVERNMENT OF SINDH  
Planning & Development Board  
Government of Sindh

(11)

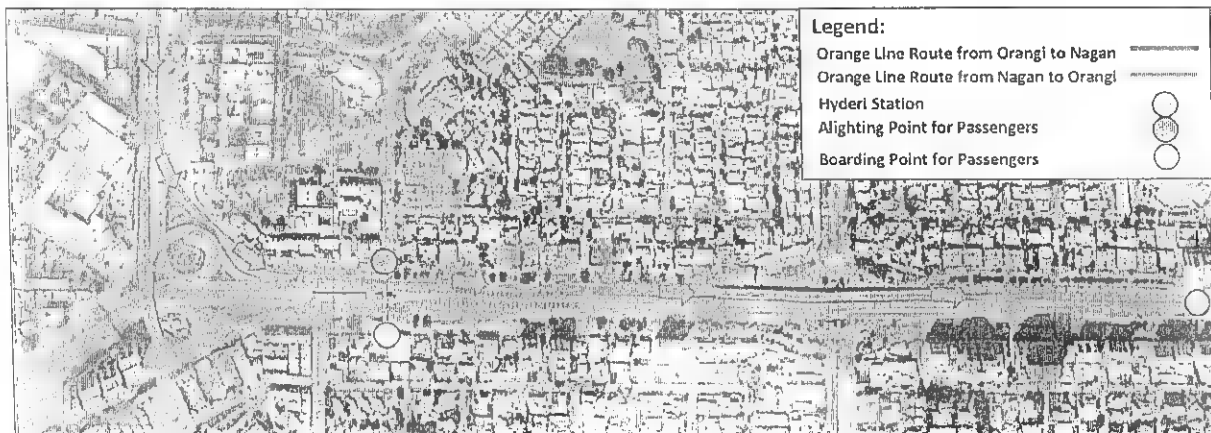


# SCHEDULE 1 (ROUTE MAP)



## Integration of Orange line BRTS with Green Line BRTS

Integration of Orange line BRTS with Green Line BRTS



- In this options Orange Line bus will be taking a left turn from Board Office towards Nagan.
- Bus will move in mix traffic between Board Office and KDA Flyover and will use Green Line Corridor between KDA Flyover and Nagan.
- Passengers for Numaish will alight at Hyderi Bus Stop and transfer to Green Line Station. There will be a negative journey for them.
- However, passengers for Nagan can be served without shifting of bus.

Transport & Mass Transit Corporation  
Government of Punjab  
Karachi

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Chief Executive Officer  
Sindh Infrastructure Development Co. Ltd  
Cabinet Division  
Government of Pakistan

ANNEXURE – A



No. SMTA/BUSOPS/OL-GL/1335  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT DEPARTMENT

Off No.021-99111617  
Fax No.021-9911298

Karachi, Dated: 5<sup>th</sup> September 2019

To:

✓ The Chief Executive Officer,  
Sindh Infrastructure Development Company Limited (the SIDCL)  
Cabinet Division,  
Government of Pakistan.

Subject: BRTS – ABDUL SATTAR EDHI (ORANGE) LINE PROJECT

This is with reference to the meeting held on 4<sup>th</sup> September 2019 under the Chairmanship of Secretary, Transport & Mass Transit Department, GoS wherein it was discussed that the Orange Line shall be integrated with Green Line BRT. A meeting was held with Honorable Chief Minister, Sindh on 16<sup>th</sup> July 2019, in that meeting it was desired that Orange Line Operations extended up to Nagan Chowrang to make it more useful for its users without needing them to transfer at Board Office. It was also desired to build provision in infrastructure at Board office to extend BRT Orange operations towards Numaish. Our Consultant has developed an infrastructure Integration Concept Plan attached Annexure 1 for your review, in order to enhance the ridership and meet economies of scale.

In addition to this Government of Sindh would like to know if SIDCL may procure fleet of Orange Line along with ITM. Also, the complete Operation & Maintenance (O&M) may be outsourced to SIDCL whereas the GoS shall provide the funds to SIDCL for prospective bus procurement and operations.

In this regard, the viewpoint of SIDCL may require in order to proceed with the project at the earliest.

MANAGING DIRECTOR  
SINDH MASS TRANSIT AUTHORITY

Copy is forwarded to:

1. P.S to Minister, Transport and Mass Transit Department, GoS
2. P.S Chairperson Planning & Development Board, Planning & Development Department, GoS
3. P.S to Secretary, Transport & Mass Transit Department, GoS

DCL  
2019-09-05

*Pls please  
for comments  
for comments*

Page: 1

Chief Executive Officer  
Sindh Infrastructure Development Co Ltd  
Cabinet Division  
Government of Pakistan

Chief Executive Officer  
Sindh Infrastructure Development Co Ltd  
Cabinet Division  
Government of Pakistan

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Tele. 021-09211017  
Fax. 021-09211298

NO. MTC/BRT OL/2014/  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
Dated: 24-09-2014

The Additional Chief Secretary (Dev)  
Planning & Development Department,  
Government of Sindh,  
Karachi.

Subject: Diverting of ADP Allocation of Rs. 3,000 Million from BRT Green Line to BRT Orange Line

I am directed to refer to the subject noted above and forward a copy of approved Summary for Chief Minister Sindh in respect of above.

It would be appreciated if necessary Re-appropriation Order in this regard is issued. PC-I for the BRT Orange Line to follow shortly.

Fazal Karim Khatri  
Director MTC

Copy to:

1. Chief (T&C) Section, P&D Department, GOS, Karachi.
2. PS to Secretary Transport & Mass Transit Department, GOS, Karachi.
3. PA to Chief Economist, Planning & Development Department, GOS, Karachi.
4. PA to Special Secretary (Tech.) Planning & Development Department, GOS, Karachi.
5. PS. To DG KMTC, KMC



GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT

2155  
5/9/14

2155  
5/9/14

Tele. 021-99211017  
Fax. 021-99211298  
Email: secretarytransport@sindh.gov.pk

**SUMARY FOR CHIEF MINISTER SINDH**

SUBJECT: **DIVERTING OF ADP ALLOCATION OF RS.3000 MILLION FROM  
BRT GREEN LINE TO BRT ORANGE LINE.**

The Planning & Development Department, Government of Sindh has allocated Rs.3000 Million in its ADP 2014-15 for BRT Green Line Project(Scheme No.2214). Subsequently, a meeting was held on 12.07.2014 under the Chairmanship of Chief Minister Sindh on BRT Green Line project. In the said meeting the Chief Minister Sindh discussed with participants the decision of Federal Government to finance the whole Green Line project as announced by Prime Minister of Pakistan during last visit to Karachi.

2. Consequently, on the recommendation of the Minister Transport, Sindh it was decided to implement another BRT line(Orange Line 3.9 km) which starts from Orangi & connects Green Line at Board Office Chowringi at North Nazimabad through available funding of Rs.3 Billion in ADP 2014-15 for BRT Green Line Project. This would facilitate connectivity and accessibility to 2.5 lac commuters of Orangi Town daily.

3. The Chairman appreciated the proposal and directed Transport & Mass Transit Department, Government of Sindh to complete the procedures including feasibility report and PC-1 of the project (BRT Orange Line) and approve the diversion of ADP Funding of Rs.3 Billion from Green Line to Orange Line project (Draft minutes of meeting submitted for approval of the Chief Minister, Sindh placed at annexure-A)

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them. The list includes names such as "J. H. Smith", "W. J. Jones", and "A. B. Brown", among others.

Age Group	Percentage of Respondents
18-29	85%
30-49	80%
50-69	75%
70+	70%

MASS  
*Handwritten signature*  
 10/10/10

22/8/14

CHIEF SECRETARY SINDH

CHIEF MINISTER SINDH

FILE NO. 60-8-204  
EX No 4987  
DATE 19/8/55  
NO PSIMIN-IPT LAD 469  
KARACHI DATED 28/8/2016

GUTWARD.

587  
12-8-2014

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8/9/17

GOVERNMENT OF SINDH  
PLANNING DEVELOPMENT  
AND SPECIAL INITIATIVES  
DEPARTMENT

SUBJECT: DIVERTING OF ADP ALLOCATION OF RS.3000 MILLION FROM BRT  
GREEN LINE TO BRT ORANGE LINE

7. The proposal of Transport and Mass Transit Department at para-4 of the summary would help in initiating the work on Orange Line BRTS estimated to cost Rs.1210.000 million and would facilitate connectivity and accessibility to some 0.250 million commuters of Orangi Township on daily basis. The above said BRTS Line would serve as feeder to Green Line BRTS likely to be implemented through Federal resources.
8. The proposal at para-4 above of the summary for diversion of ADP funds to a non-ADP scheme (BRTS Orange Line) may kindly be considered for approval.

CHIEF SECRETARY, SINDH

(Muhammad Waseem) 5/9/14  
Additional Chief Secretary (Dev.)

8.9.14

CHIEF MINISTER, SINDH

Adv. Secy. Finance

Para 8 is supported.

Chief Secretary, Sindh

15.9.14

Chief Minister, Sindh

Secy Transport 23-9-14

157/2014

1577  
11-09-2014  
1577

4570  
87/2014

12-09-14/15-9-2014

MINUTES OF THE MEETING HELD ON 12<sup>TH</sup> JULY, 2014 UNDER THE  
CHAIRMANSHIP OF THE CHIEF MINISTER SINDH ON BRT GREEN LINE PROJECT

The Honourable Chief Minister Sindh convened a meeting on July 12, 2014 to review the progress on Green Line Bus Rapid Transit project in the light of the announcement made by the Prime Minister for 100% financing of the BRT Green Line. The Following were present in the meeting:

- 1) Syed Qaim Ali Shah, Chief Minister, Sindh in Chair
- 2) Syed Murad Ali Shah, Advisor to CM on Finance
- 3) Mr. Mumtaz Hussain Jakharan, Minister Transport
- 4) Mr. Alamddin Baloo, Principal Secretary to Chief Minister Sindh
- 5) Mr. Shoaib Ahmed Siddiqui, Commissioner Karachi
- 6) Mr. Muhammad Sohail Rajput, Secretary Finance, GoS
- 7) Mr. Tuaha Ahmed Farooqui, Secretary Transport & MT
- 8) Mr. Rauf Akhtar Farooqui, Administrator, KMC
- 9) Mr. Iftikhar Ali Kaimkhani, Director General, KMTC
- 10) Mr. Fazal Karim Khatri, Director, KMTC

2. Meeting started with the recitation of verses from the Holy Quran by the Principal Secretary to the Chief Minister. The Chief Minister Sindh apprised the meeting about the announcement of Rs. 35 Billion for the Green Line BRT Project by the Prime Minister of Pakistan during his recent visit to Karachi. "The ball is now in our court to complete the pre-requisite for implementation of the project", he said.

3. Secretary, Transport & Mass Transit informed that the preparation of PC-1 of the BRT Green Line is in progress and shall be placed before the PDWP in next two weeks time. He then gave a detailed presentation on the project highlighting the salient feature of BRT Green Line including total length, length at-grade, elevated and number of stations etc.

4. The chair acknowledged the briefing and asked about the way forward to accomplish the project in a shortest possible time. At this point, Mr. Iftikhar Ali Kaimkhani, Director General, KMTC responded to the query and stated that creation of Sindh Mass Transit Authority on the pattern of Punjab Metro Bus Authority is pre-requisite in order to streamline the implementation of Mass Transit Projects in the Province. He pointed out that currently, BRT on Blue line (MRT) was under implementation by the Private Party (Behria) and there was no regulatory authority to grapple the issues including overlapping of its alignment with Green Line at a point, conversion of BRT to MRT in future etc. He further stated that PC-1 for BRT Green Line project required to be prepared by the professional. He suggested M/s NESPAK who were engaged for Yellow Line might be asked to prepare PC-1 for Green Line as an additional task under the same contract. It was also informed that Technical & Financial Evaluation Committee (TFEC) had already approved the suggestion. Moreover, he pointed out that Engineering, Procurement & Construction (EPC) contract might be initiated to implement the project on fast track.

5. Secretary Transport &MT informed that the Summary for Chief Minister Sindh for establishment of SMTA duly vetted by Law Department for enactment had already been submitted. Chief Minister Sindh directed the Principal Secretary to follow up the action.
6. The Advisor to CM for Finance, Syed Murad Ali Shah also supported for early creation of SMTA and EPC Contract mechanism for the execution of BRT Green Line Project on fast track.
7. Minister Transport gave a proposal for implementation of another BRT Line i.e Orange Line (15.1 KM) which starts from Orangi and connect Green Line at North Nazimabad through available funding of Rs. 3 Billion (allocated for BRT Green Line) in ADP 2014-15. The Chair appreciated the proposal and directed Transport and Mass Transit Department to complete the procedures including Feasibility study and PC-I etc.
8. The Chair during the course of discussions asked about the progress of BRT Yellow Line. Secretary Finance apprised the meeting that the project is currently under bidding process. RFR had been issued to 16 pre-qualified bidders on June 19, 2014. He pointed out about the building structure which was under construction at Shahrah-e-Quideen, narrowing the RoW of Yellow line at turning. This need to be addressed at this stage. The Administrator, KMC informed that the matter had already been taken up with Sindh Building Control Authority, who granted NoC for the structure. Chief Minister Sindh directed the Administrator KMC to write letter to SBCA to resolve the issue endorsing copy to CM Secretariat.
9. Advisor to CM for Finance also proposed to get the RoW of KCR track from the Pakistan Railway and run Articulated Buses on the track. Since there is no chance for revival of KCR in future as IRCA declining funding for the project.
10. After detailed discussions, following decisions were taken in the meeting:
- M/s NESPAK would be requested for the preparation of PC-I in at the earliest so that the same might be presented for consideration of PDWP.
  - EPC Contract would be initiated for the execution of BRT Green Line project.
  - Transport and Mass Transit Department would initiate process for the preparation Feasibility study, PC-II and PC-I of the BRT Orange Line. Rs. 3.00 Bln allocated in ADP 2014-15 for BRT Green Line would diverted to BRT Orange Line.
  - Sindh Mass Transit Authority (SMTA) shall be created as soon as possible for smooth implementation of Mass Transit Projects in the Province.
  - Administrator, KMC would write letter to SBCA for immediately addressing the issue of building structure along RoW of Yellow Line at Shahrah-e-Quideen under intimation to CM Secretariat.
11. Meeting ended with a vote of thanks to and from the Chair.





Tele. 021-99211017  
Fax. 021-99211298

No. 65-1/MTC/BRTS/2014/-888  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
Dated: August 25, 2014

✓ Mr. Adnan Rizvi  
KPMG Taseehadi & Co.  
1<sup>st</sup> Floor, Shaikh Sultan Trust Building No. 2,  
Beaumont Road,  
Karachi

SUBJECT: REQUEST FOR PREPARATION OF PC-1 FOR BRT ORANGE LINE PROJECT

I am directed to inform that the funds earmarked in ADP 2014-14 for BRT Green line are being diverted for BRT Orange Line (3.9 Km), this was decided in the meeting held under the Chief Minister Sindh on August 22, 2014. Accordingly, the work for the preparation of PC-1 including Feasibility studies is now required to be initiated.

2. In this background, it would be appreciated if you can undertake the task for the preparation of PC-1 including Feasibility Study for BRT Orange Line as an additional work under the Contract of BRT Yellow Line and quote the cost for the same on urgent basis.
3. Early response on this score would be appreciated.

(SAFDAR HUSSAIN RIZVI)  
DEPUTY SECRETARY

c.c.to:

- Mr. Farhat Adil, Vice President, NESPAK
- Administrator, KMC
- D.G. KMTC, KMC
- PS. To Secretary Transport & MT Department

(SAFDAR HUSSAIN RIZVI)  
DEPUTY SECRETARY

*we have to give them the proposal*

*At discuss*

*YU*  
*15/9*

*Sajjad S*  
*Rehan*

**MINUTES OF THE PDWP MEETING HELD ON 26-12-2014, UNDER THE CHAIRMANSHIP OF ADDITIONAL CHIEF SECRETARY (DEV), IN PLANNING AND DEVELOPMENT DEPARTMENT, GOVERNMENT OF SINDH.**

(List of participants is attached)

<b>Agenda Item # 1</b>	<b>Orange Line Bus Rapid Transit System (BRTS) from Town Municipal Administration (TMA) Orangi to KDA Round About North Nazimabad Karachi, Estimated Cost of Rs.2341.810 Million.</b>
------------------------	---

The forum was informed that the Orange Line BRT was one of the corridors proposed by JICA in the Transport Master Plan under KTIP 2030 along with other 5 BRTS corridor for better and improved public transport system in Karachi. The proposed Orangi Line BRTS would start from Town Municipal Authority (TMA) Office at Orangi Town connecting major traffic/ ridership areas of Orangi, Qasba, Paposh Nagar, North Nazimabad via Abdullah College, AO Clock Tower and terminate at KDA Roundabout in North Nazimabad on Green Line Corridor.

2. It was apprised that the main objective of proposed BRT Orange Line, 4.763 km long benefitting nearly 45000 passengers per day, would be to provide reliable, safe, affordable, high quality and fast BRT Bus Service. Additionally, the Orange Line Project bring substantial ridership to Karachi Circular Railway (KCR) in future, as the KCR is located closed to the AO Clock Tower intersection. Following project specific information were also apprised:

**Project Specific Information:**

**a) BRT Infrastructure (Civil Works)**

- BRT At-Grade Construction (4.763 KM)
- Station / Pedestrian Bridge

**b) Revenue Collection / Intelligent Transportation System**

The project will require revenue generation equipment (ticket machines, hardware, software etc.) and ITS Infrastructure (Passenger Information System, Automated vehicle location system, transit signal priority, hardware, software etc.) installed at the stations, inside the buses and hardware required for the system to operate from a command and control center.

**c) BRT Buses**

The number of buses proposed for Orange Line are 25 articulated buses (11.9-12.10 m length) with a capacity of approximately 80 passengers each (seated + standing).

3. It was informed that above scheme was considered by the Technical Committee on 16-12-2014 and following decisions were taken:

**Decisions:**

- (i) The scheme was cleared for consideration of PDWP.
- (ii) The completion time of the scheme would be discussed / decided in the PDWP meeting.
- (iii) The Modified PC-I would be submitted in the light of observations mentioned in the working paper and above discussion.

4. It was indicated that the modified PC-I based on the above decisions was not submitted by the Transport Department. The Secretary (Transport) informed that PC-I was under modification for submission.

5. It was apprised that Transport Dept had phased the scheme PC-I for two years implementation period whereas the Technical Committee had suggested completing the project in 09 months. The Chair emphasized to complete the project in line with completion period set for the Green Line. The Director KMTC and NESPAK representative viewed that Orange Line being feeder line would supplement Green Line which would commence in June / July 2015, therefore the completion period of the Orange Line be phased accordingly. The Chair consented for one year (12 months). But agreed for 14 months on the request made by the sponsors.

6. The forum invited for viewpoints of Sponsors on the 3% physical contingency provision kept in the estimates of three components, the representative of NESPAK requested for allowing this provision for all the three components i.e. on (a) BRT Infrastructure (ii) Revenue Collection / Intelligent Transportation System (iii) BRT Buses. They viewed that price fluctuation and variation in cost could be catered through price escalation provision but it could not cater for the unforeseen work in two other components of buses and RC/TTS where the provision was not supported by TC. They again requested for allowing the 3% physical contingency in above two components. Secretary (Tech) indicated that this fluctuation / variation could be met out from the escalation provision of 6.5% taken on all the three components. The Sponsors urged for allowing the 3% physical contingency on all items. The forum after detail discussions allowed the 3% physical contingency conditionally to be used also for two components (Buses & RC/ITS) when unit cost of buses change due to design basis. However the provision of 3% Contingency for the two components would not be utilized for any other purpose or item/component.

7. On financing of the scheme it was indicated that it would be funded from the allocation kept in ADP (2014-15) for scheme at Sr.# 2214 on the basis of approval given by CM. However to implementation the above scheme approval of CM on Summary as per policy decision would be required. The Sponsors agreed to initiate the Summary. The Sponsors also indicated that phasing of expenditure would also be modified in light of discussion made in Technical Committee and Rs.400.00 million would be phased for current year to initiate the project on EPC contract. The forum directed to adhere to above discussions made for phasing of expenditure to be kept in modified PC-I.

8. After detailed discussion on the following decisions were taken by the forum:-

**Decisions:**

- (i) The scheme was approved.
- (ii) The time period for completion of scheme would be taken as 14 months and the provision for the escalation would be worked out accordingly.

- (iii) 3% Physical Contingency was allowed conditionally also for two components (Buses and RC/ITS) to be used when the unit cost of Buses and Other items change due to design basis. However the provision of 3% contingencies for these two components would not be utilized for any other purpose or item/component.
- (iv) Modified PC-I in light of discussions/ decision would be submitted.
- (v) The Transport and Mass Transit Department would move the Summary for approval of the Chief Minister Sindh as the cost of the scheme was more than Rs.200.00 million.
- (vi) Advice for AA would be issued on receipt of Modified PC-I and copy of approved Summary.



No. SO(TC)23/1-P&D/2014  
GOVERNMENT OF SINDH  
PLANNING & DEVELOPMENT  
DEPARTMENT  
(DEVELOPMENT SECTION)  
Karachi, dated the 24<sup>th</sup> December 2014

The Secretary to Govt. of Sindh

- Finance Department
- ✓ Transport Department
- Works & Services Department

Attn: Additional Secretary

Attn: Additional Secretary

The Administrator  
Karachi Metropolitan Corporation

Subject:

**MINUTES OF TECHNICAL COMMITTEE MEETING HELD ON 16.12.2014 IN  
P&D DEPARTMENT, GOVERNMENT OF SINDH, KARACHI**

I am directed to enclose herewith a copy of minutes of Technical Committee meeting held on 16-12-2014, pertaining to schemes of Transport / Works & Services Department, for favour of information and necessary action.

*P. follow up  
P. u. further m. a. 24/12*

*24/12/14*  
(IRSHAD ALI TALPUR)  
CHIEF (DEVELOPMENT)  
Ph: 021-99211417

Copy is forwarded for information & necessary action to:

- The Additional Secretary (Dev), Finance Department, GOS, Karachi.

C.C.10:-

- The Sr. Chief, T&C Section, P&D Department, GOS, Karachi w/r to his section's u.o letter No. 1182/P&D/T&C/TC/2013-14, dated the 23<sup>rd</sup> December 2014
- PS to ACS (Dev)
- PA to Secretary (Dev) / (Tech)
- PA to SSD

CHIEF (DEVELOPMENT)

CHIEF (DEVELOPMENT)

432  
24.12.2014  
TRANSPORT DEPT.

**GOVERNMENT OF SINDH**  
**PLANNING, DEVELOPMENT AND SPECIAL INITIATIVE DEPARTMENT**  
**LIST OF PARTICIPANTS OF THE TECHNICAL COMMITTEE MEETING**  
**HELD ON 16.12.2014**

Sr. #	Name & Designation
<b>PLANNING &amp; DEVELOPMENT DEPARTMENT</b>	
1	Ms. Shireen Narejo Secretary (Planning) <span style="float: right;">In Chair</span>
2	Ms. Rehana G. Ali Memon, Secretary (Dev).
3	Mr. P.S. Rajani, Secretary (Tech)
4	Mr. Mehtabul Haque, Senior Chief (T&C).
5	Mr. Irshad Ali Talpur, Chief (Development)
6	Mr. Sikandar Ali Shaikh, Assistant Chief (T&C)
7	Mr. Anwar Ali Mughal, Assistant Chief (T&C)
<b>FINANCE DEPARTMENT</b>	
8	Mr. Faisal Pirzada, Deputy Secretary (Dev-I).
<b>LOCAL GOVERNMENT DEPARTMENT</b>	
9	Mr. Latif Khan, Assistant Director-II
<b>TRANSPORT DEPARTMENT</b>	
10	Mr. Fazal Karim Khatri, Director (KMTC)
11	Mr. Abdul Rasheed Mughal, Consultant (KMTC)
12	Mr. Rehan, Consultant (NESPAK)
<b>WORKS AND SERVICES DEPARTMENT</b>	
13	Mr. Muhammad Alamgir, Deputy Secretary (Tech).
14	Mr. Asghar Ali Shah, Executive Engineer (Highways).

**MINUTES OF THE TECHNICAL COMMITTEE MEETING HELD ON 16-12-2014,  
UNDER THE CHAIRMANSHIP OF SECRETARY (PLANNING), IN PLANNING AND  
DEVELOPMENT DEPARTMENT, GOVERNMENT OF SINDH.**

(List of participants is attached)

Agenda Item # 1	Orange Line Bus Rapid Transit System (BRTS) from Town Municipal Administration (TMA) Orangi to KDA Round About North Nazimabad-Karachi, Estimated Cost of Rs.2341.810 Million.
--------------------	--

The Committee was informed that the Orange Line BRT was one of the corridors proposed by JICA in the Transport Master Plan under KTIP 2030 alongwith other 5 BRTS corridor for better and improved public transport system in Karachi. The proposed Orangi Line BRTS would start from Town Municipal Authority (TMA) Office at Orangi Town connecting major traffic/ridership areas of Orangi, Qasba, Paposh, Nagar, North Nazimabad via Abdullah College, AO Clock Tower and terminate at KDA Roundabout in North Nazimabad on Green Line Corridor.

2. It was apprised that the main objective of proposed BRT Orange Line 4.763 km long benefitting nearly 45000 passengers per day would provide reliable, safe, affordable, high quality and fast BRT Bus Service. Additionally, the Orange Line Project bring substantial ridership to Karachi Circular Railway (KCR) in future, as the KCR is located closed to the AO Clock Tower intersection. Following project specific information were also apprised:

**Project Specific Information:**

**a) BRT Infrastructure (Civil Works)**

- BRT At-Grade Construction (4.763 KM)
- Station / Pedestrian Bridge

**b) Revenue Collection / Intelligent Transportation System**

The project will require revenue generation equipment (ticket machines, hardware, software etc.) and ITS Infrastructure (Passenger Information System, Automated vehicle location system, transit signal priority, hardware, software etc.) installed at the stations, inside the buses and hardware required for the system to operate from a command and control center.

**c) BRT Buses**

The number of buses proposed for Orange Line are 25 articulated buses (11.9-12.10 m length) with a capacity of approximately 80 passengers each (seated + standing).

3. It was informed that replies to the observations had been provided by the Transport Department. The S/A had agreed to incorporate details or modify the details provided for the comment (ii), (iv) and (viii) while the rest of replies were put-up for discussion in the Technical Committee

4. For incorporation of market rates as the basis for estimation of different quantities in the PC-I, it was indicated that many items of the CSR 2012, specially for road items were available and therefore be made basis for estimation. The Consultant (KMTC) apprised that work would be under taken on EPC mode under which International bidding would be invited and the bidders would not be bound to go by any schedule. He further informed that under the Green Line BRTS which was approved by the CDWP these rates were taken. Secretary(Tech) and Secretary (Dev) emphasized that the source of funding for the Orange Line was through Sindh Government resources, therefore CSR 2012 be followed and for those items where rates were not available, the market rates be adopted with provision of rate analysis.

5. About the 1% kept for vetting charges, the Consultant (KMTC) clarified that since work would be undertaken on the EPC contract therefore it would be essentially required to verify the design and estimates of Executing Agency by any third party, and as such provision for an Independent Consultant at 1% had been proposed.

6. About the time frame, it was informed that Orange Line had been planned to be completed in two years whereas Green Line was proposed for completion in 09 months, therefore it was suggested to complete the Orange Line in 09 months. Director KMTC and Consultant (KMTC) replied that it would not be possible to complete the scheme in such a short time. They further informed that Orange Line was a feeder line which would supplement the Green Lines therefore it would be appropriate that Orange Line be constructed after the completion of Green Line. The forum asked the Sponsors to complete the Orange Line in 9 months as per Green Line. However the completion period will be discussed further in PDWP meeting.

7. About the irrational financial phasing, it was apprised that Rs.39.28 million were allocated in 1<sup>st</sup> year, and Rs.2302.58 million in 2<sup>nd</sup> years against the allocation of Rs.3.00 billion kept for Orange Line in the Current Financial Year. The Consultant KMTC apprised that in view of the short time left in the current year the utilization of funds could be done upto Rs.400.000 million to pay for the initiation of project. They agreed to modify the phasing.

8. The Secretary (Tech) enquired why the 3% physical contingency had been flatly taken for all three components separately (i) BRT Infrastructure (ii) Revenue Collection / Intelligent Transportation System (iii) BRT Buses). It was viewed that 3% provision be charged only for the Infrastructure component where civil work was involved. The Consultant KMTC clarified that variation in the cost of all the items due to price fluctuation would be catered from the provision of price escalation kept at 6.5% while the said provision would cater for the unforeseen work which could also happen in other two components, therefore 3% contingency be allowed. After discussion, the forum decided that provision of 3% physical contingency be only kept for infrastructure component while price escalation provision could take care of any unforeseen for the other two components.

9. After detailed discussion, following decisions were taken by the Committee:-



**Decisions:-**

- (i) The scheme was cleared for consideration of PDWP.
- (ii) The completion time of the scheme would be discussed / decided in the PDWP meeting.
- (iii) The Modified PC-I would be submitted in the light of observations mentioned in the working paper and above discussion.

Agenda Item # 2	Rehabilitation of Drivers Training School under police private partnership at Karachi / Hyderabad / Sukkur / Larkana (Revised) ADP # 2211 (2014-15).
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Agenda Item # 3	Improvement / Rehabilitation of Road in UC-05, UC-06 & UC-07 Site Town (Outside ADP), Estimated Cost of Rs.72.793 million.
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Agenda Item # 4	(I) Rehabilitation and Improvement of Nallah from Banras Chowk to Muslimabad of UC-08 Site Town (II) Improvement and Rehabilitation of Roads UC-08 & UC-09 of Site Town (Outside ADP), Estimated Cost of Rs.70.720 million
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**Decision**

The consideration of the above schemes were dropped as PC-Is of the scheme at item #3 and #4 were not received. The scheme at agenda item #2 did not require consideration.

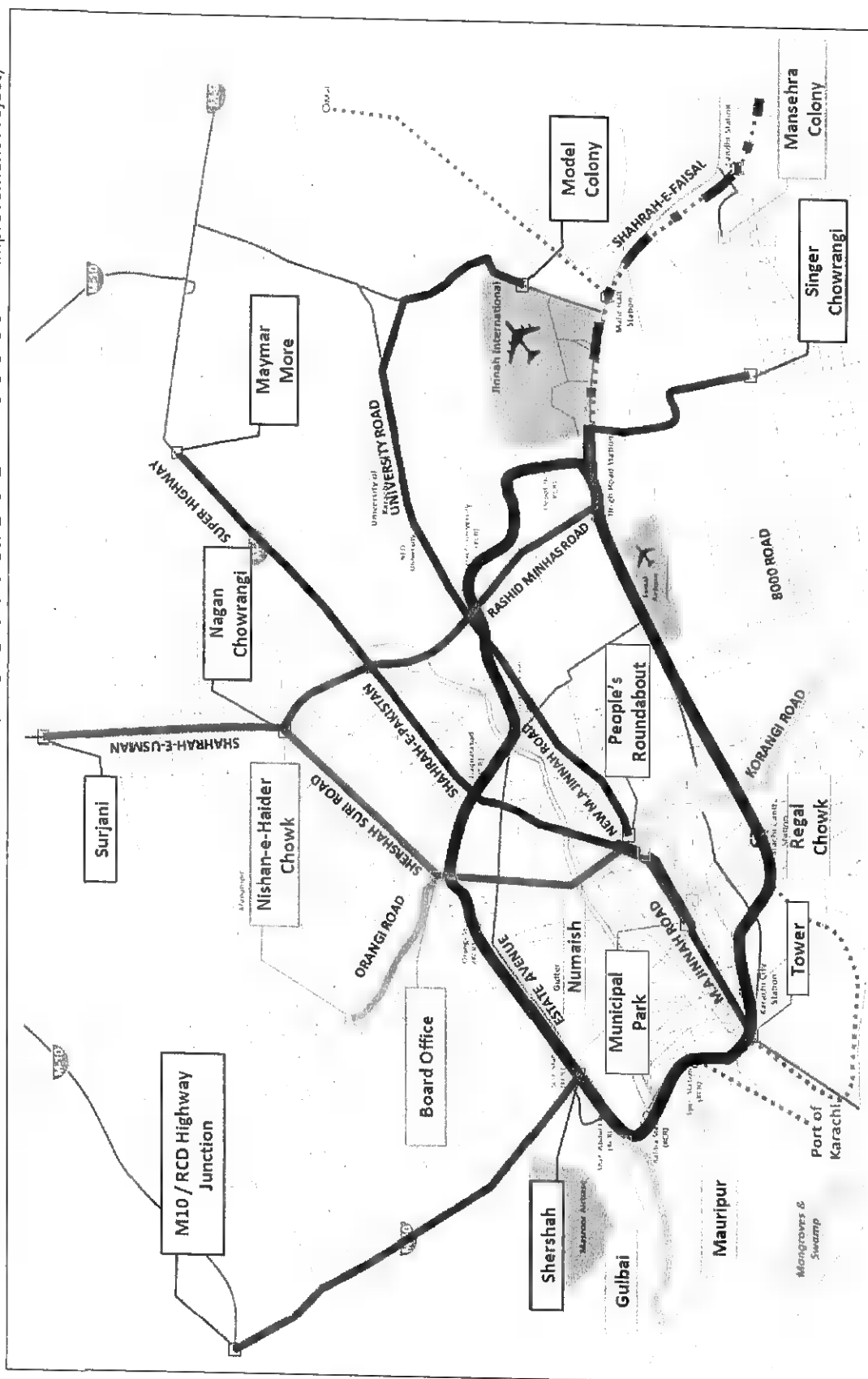
Agenda Item # 4(A)	Rehabilitation of road from Gambat to Ranipur (6.44 Kms) Estimated Cost Rs. 83.872 Million ADP (2014-15) Sr. No. 2454.
-----------------------	--

11. It was informed that the scope envisaged rehabilitation of road from Gambat to Ranipur. The scheme stood included in the ADP (2014-15) under the portfolio of new schemes included in prioritized category-II. The above road having total length of 6.44 Km, and width of 5.5 m (18 ft) had proposed surfacing 50 mm (2 inches) with Asphalt concrete on 02 coat surface dressing. The road in its command would serve 08 villages having total population of 103000 souls. After completion the proposed road would provide better communication facilities to the people of both cities along with the en route villages for varied purpose.

12. It was further informed that the replies to the observations of working paper were received wherein the Sponsoring Agency had agreed to float a Summary for CM Sindh seeking orders for

# Planned Mass Transit Corridors - KTIP

(Karachi Transportation Improvement Project)



KARACHI CIRCULAR RAILWAY	YELLOW LINE BRT CORRIDOR
KARACHI CIRCULAR RAILWAY	ORANGELINE FEEDER CORRIDOR
RED LINE BRT CORRIDOR	AQUA LINE FEEDER CORRIDOR
BLUE LINE MRT CORRIDOR	BROWN LINE MRT CORRIDOR
GREEN LINE BRT CORRIDOR	PURPLE LINE FEEDER CORRIDOR

ANNEXURE 07



Copy for  
**SINDH INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED**  
**CABINET DIVISION**  
**GOVERNMENT OF PAKISTAN**  
6<sup>TH</sup> FLOOR, EXTENSION BLOCK, BAHRIA COMPLEX IV, KARACHI  
021-35155101; Fax: 021-35155102  
[info@sidcl.com.pk](mailto:info@sidcl.com.pk); [www.sidcl.com.pk](http://www.sidcl.com.pk)

ANNEXURE 08

No. SIDCL(GLBRTS)/COO/2020/8010

Dated: 3<sup>rd</sup> November, 2020


**The Secretary to the Government of Sindh**  
Transport and Mass Transit Department,  
**Karachi.**

Subject: **FLEET PROCUREMENT FOR BRTS ORANGE LINE PROJECT**

This is with reference to the ongoing above stated project and SIDCL letter no. SIDCL(GLBRTS)/GM/2020/7155 dated 08<sup>th</sup> June, 2020 wherein tentative cost estimates for operations of Orange line was shared with Transport and Mass Transit Department (T&MTD), Government of Sindh.

2. SIDCL opened financial bids for fleet procurement project on 16<sup>th</sup> October, 2020 and received a bid price of 3,110,600 US\$ (155,530 US\$ / Bus) for Orange line 20 buses (Annex- A) where SIDCL shared tentative cost of 138,000 US\$ / bus excluding taxes to T&MTD, which is 12.7 % higher than the provisional estimates.

3. In view of the above, it would be highly appreciated if the updated figures of Rs. 2,042.46 Million against Rs.1,999.38 Million (difference of Rs 43,115 Million) (Annex-B) along with phasing and Foreign Exchange Component (FEC) of US \$ 5,488.58 Million, may be incorporated in the revised PC-I accordingly, please.

  
(Bilal Ahmed Memon)  
Chief Operating Officer, SIDCL

Distribution to:

- Chairman, Planning and Development Board, Govt of Sindh;
- PS to the Chief Executive Officer, SIDCL.

2538/  
04/11/2020

AS/cc

## Price of Schedule for Goods pertaining to 12-meter BRTS vehicles

Item	Description	Country of origin	Quantity and Unit of Measurement (No.)	Unit Price DAP (Delivered at Place) - (including transportation to Project site, Karachi, Pakistan)	Total DAP Price per item
i	2 Supply of 12 meter BRTS vehicles	3	4	5	6 = 4 x 5
i		China	20 buses	\$155,530.00	\$311,060.00
ii	Full spare parts package for BRTS vehicles from the delivery of the vehicle through the duration of contract	China	Lump sum	\$365,300.00	\$365,300.00
iii	Supply of tools and diagnostic equipment for BRTS vehicle	China	1 set	\$12,200.00	\$12,200.00
<b>Total (B1)</b>					\$3,488,100.00

## Price of Schedule for related services pertaining to 12 meter BRTS vehicles

Item	Description	Country of origin	Quantity and Unit of Measurement	Unit Price	Total Price
i	2	3	4	5	6 = 4 x 5
i	Maintenance supervision of vehicles	Pakistan	36 months	\$7,072.22	\$254,600.00
ii	Maintenance training program	Pakistan	Lump sum	\$2,800.00	\$2,800.00
iii	Driver training program	Pakistan	Lump sum	\$2,300.00	\$2,300.00
iv	Completion of full vehicle homologation, registration, and licensing for BRTS vehicles	Pakistan	Lump sum	\$103,200.00	\$103,200.00
<b>Total (B2)</b>					\$362,900.00

Note: The Supplier shall list all such components in Bidding Form F2 (submitted as part of its Bid) that shall be procured or arranged locally in Pakistan but form part of the overall Goods, such as lubricants and/or engine oil.

The Supply Price for Goods corresponding to such locally sourced components shall be paid to the Supplier's Local Agent in PKR (USD amount converted into equivalent PKR based on the Conversion Rate) and not be paid through the Letter of Credit.

## Annex-B

S. No.	Component	Amount in FEC – US\$	36 % Taxes for buses 30% for ITS PKR
<b>CAPEX COST</b>			
1	12 m Diesel Hybrid Buses (20 Nos.)	3,110,600	179,170,560
2	IITS (Hardware + Software + Taxes @ 30%)	2,377,977	60,636,306
	Total	5,488,577	239,806,866
Total (A) in PKR		1,117,979,260	
<b>OPEX COST</b>		<b>PKR</b>	<b>Amount in PKR (3 Years)</b>
3	Bus Ops O & M	187,234,740	561,704,220
	- Total Revenue (Fare <sup>5</sup> + Non-Fare <sup>6</sup> )	172,915,628	518,746,884
	- Operations' Deficit	14,319,112	42,957,336
4	ITS Operations	11,230,000	33,700,000
5	ITS Maintenance (2 yrs warranty + 1 year S&M)		44,000,000
6	Station Management <sup>4</sup>	43,200,000	129,600,000
7	Operation Unit	20,000,000	60,000,000
	Total Subsidy Req. (B)	88,749,112	310,257,336 <sup>B</sup>
	Total (A+B <sup>B</sup> )	1,428,236,596	
9	Add 2% Consultancy Charges (Design, Transaction, Legal and Operations Advisory)	28,564,731.91	
10	Add 2% Contingencies (Unforeseen/hedging/price variation/ancillary	28,564,731.91	
	Add 2% Insurance of Government Asset (0.67% per year)	28,564,731.91	
11	Add 2% Establishment Charges of SIDCL	28,564,731.91	
15	Improvement in Infrastructure (Physical Integration & Infra. Main.)	500,000,000	
	Grand Total	2,042,495,523	

1. Cost of per bus – 155,530 USD (Final price as per procurement)
2. Conversion Rate used – 160 PKR
3. Ridership of Orange line 24,225 passengers / day (Source – Consultants)
4. Fare revenue is calculated at an average Fare of PKR 22 per passenger
5. Non- Fare Revenue is taken at 3% of the Fare Revenue because of fewer stations on corridor
6. Phasing and FEC component to be provided by GoS is as under

In Millions (PKR/US\$)	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	Total
PKR	451,232,758.8	258,380,612.69	227,354,879.09	227,354,879.09	1,164,323,129.65
FEC (US\$)	5,488,577				5,488,577
TOTAL (PKR Eq.)	1,329,405,152.36	258,380,612.69	227,354,879.09	227,354,879.09	2,042,495,523



ANNEXURE 09

**No. MTC/TMTD/BRT OL/2015/692**  
**GOVERNMENT OF SINDH**  
**TRANSPORT & MASS TRANSIT**  
**DEPARTMENT**  
Dated October 28, 2015

Tele. 021-99230665  
Fax. 021-99231153

To

Mr. RehanZamin,  
Principal Engineer,  
M/s NESPAK, Karachi

**SUBJECT:- BUS RAPID TRANSIT SYSTEM (BRTS) "ORANGE LINE" - BID**  
**EVALUATION REPORT**

This is with reference to the Bid Evaluation Report of Bus Rapid Transit System (BRTS) "Orange Line" infrastructure development submitted vide letter dated 22.10.2015, received in this office on 26.10.2015.

The Evaluation Report was examined with reference to the detailed cost estimates for infrastructure development works of BRT Orange Line in EPC mode prepared and submitted by M/s. NESPAK vide letter dated October 07, 2015 and the lowest evaluated bid. The said report comprises of thorough examination of the section / item-wise comparison of the estimated cost and lowest evaluated bid. It can be noticed that the percentage variation of the bid compared with the estimated cost is abnormally high within average variation of + 81.56%.

In this context, it is proposed to undertake a careful review of the cost estimates and the bids with reference to the conventional bidding process wherein all the contract variation risks are the responsibility of the Procuring Agency, and the EPC mode wherein all the contract variation risks are the responsibility of the Contractor.

FazalKarimKhatri  
Project Director  
BRT Orange Line Project

c.c. to:

- Managing Director, NESPAK, Lahore, Pakistan
- DG KMTTC, T&MTD, GoS
- P.S. to Secretary Transport & Mass Transit Department



NO. KMTC/TMTD/BRT-OL/2015/  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
GOVERNMENT OF SINDH  
Karachi, dated November 5, 2015

**MINUTES OF SELECTION COMMITTEE FOR EPC CONTRACT FOR BRT ORANGE  
LINE PROJECT – INFRASTRUCTURE DEVELOPMENT HELD ON NOVEMBER 5, 2015  
AT 3:00 PM IN THE COMMITTEE ROOM OF TRANSPORT & MASS TRANSIT  
DEPARTMENT, GOVERNMENT OF SINDH.**

*LIST OF PARTICIPANTS AT ANNEX-I*

Meeting started with the recitation from the Holy Quran. At the outset the Chair welcomed the participants and apprised that the Bus Rapid Transit Project is top priority of Government and development of such projects are of vital importance to provide efficient, reliable and comfortable transport service to the commuters. It was also mentioned that the BRT Green Line Project financed by the Federal Government is in the advance stage of implementation and the time line of BRT Orange Line is to be matched with Green Line to ensure simultaneous operation and commissioning. The chair then invited NESPAK, the Project Consultant to give briefing on the BRT Orange Line (infrastructure development) bids evaluation report.

2. While briefing on the Bid Evaluation Report, Mr. Rehan Zamin, Principal Engineer, NESPAK mentioned that a detail pre-qualification process was undertaken to short list the suitably qualified firms for the Infrastructure Development works. The following 4 firms were qualified after due evaluation:

- i. Joint Venture of M/s Maqbool Associates – M/s KAPEC –M/s EA Consulting (Pvt) Ltd.
- ii. Consortium of M/s CUEC, M/s UCD & M/s BUCRBG
- iii. M/s China Railway Construction Corporation (International) Ltd
- iv. Joint Venture of M/s Usmani International Associate (Pvt) & M/s Loya Associates

4. In response the following 3 firms submitted the bids, which were opened and announced before the Selection Committee on October 7, 2015:

S. No.	Name of Bidders	Announced /Quoted Price (Pak Rs.)
1	Joint Venture of M/s Maqbool Associates – M/s KAPEC –M/s EA Consulting (Pvt) Ltd.	2,334,869,366.00
2	Consortium of M/s CUEC, M/s UCD & M/s BUCRBG	2,492,643,541.00
3	M/s China Railway Construction Corporation (International) Ltd	3,430,897,248.00

5. The prices announced at the time of opening of Bids and corrected Bid Prices of the Bidders and their comparison with Cost Estimate of Project i.e. Rs. 1,227,815,411/=(which is inclusive of Construction Cost, Design Cost, Geotechnical Investigation and Environmental Impact Assessment Cost) is as below:

S. No	Name of Bidders	Announced/ Quoted Price (Rs.)	Arithmetically Corrected Price (Rs.)	Cost Estimate	Percentage variation with Cost Estimate
1	Joint Venture of M/s Maqbool Associates – M/s KAPEC –M/s EA Consulting (Pvt) Ltd.	2,334,869,366.00	2,229,261,984.00	1,227,815,411.00	+81.56%
2	Consortium of M/s CUEC, M/s UCD & M/s BUCRBG	2,492,643,541.00	2,492,643,545.00	1,227,815,411.00	+103.01%
3	M/s China Railway Construction Corporation (International) Ltd	3,430,897,248.00	<b>NOT EVALUATED AS THE BIDDER HAS NOT SUBMITTED THEIR BID AS PER ADDENDUM NO.1</b>		

6. It was further informed that the recommendations of the Evaluation Report are based on SPPRA Rules 2010 (in Particular Clause 4, Principal of Procurement) which states that:

“While procuring goods, work or services, procuring agencies shall ensure that procurements are conducted in a fair and transparent manner and the object of procurement brings value for money to the agency and the procurement process is efficient and economical”.

7. The evaluated bid price of the lowest Bidder, Joint Venture of M/s. Maqbool Associates - M/s. KAPEC - M/s. EA Consulting (Pvt.) Ltd is 81.56% higher than the Cost Estimate and as mentioned earlier some of the rates quoted by the Bidder are exorbitantly high and do not seem justifiable.

8. The other bid i.e. of Consortium of M/s. CUEC, M/s. UCD & M/s. BUCRBG is even higher and also cannot be considered.

9. The acceptance of such high bids is also seen to be in conflict with SPPRA Rule 48 which states that the bidding process may be considered valid if the “prices are comparable to the prices or rates of the last awarded contract or the market prices.”

10. Under the above circumstances, the objective of achieving value for money through this procurement process does not seem attainable and no bid can be recommended for award as it will put unnecessary burden on the public exchequer. The Employer has the right to annul the bidding process as per Clause 32.1 of the Instructions to Bidder (of the



Bidding Document) and as allowed under SPPRA Rule 25(1) which states that "A procuring agency may cancel the bidding process at any time prior to the acceptance of a bid or proposal".

11. In view of the recommendations of Bid Evaluation Report, it was observed that the lowest evaluated bidder cannot be considered for award being 81.56% higher than the Cost Estimate.

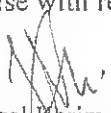
12. To find a way forward for project implementation within the overall timeline, the option of scrapping current bids and going for re-bidding was discussed. However, it was noted that the re-bidding would take time and this could delay the entire project.


13. The other option that could be looked into was negotiations with current bidders but it was noted that the Procuring Agency cannot enter into negotiations as Rule 52 of Sindh Public Procurement Rules 2010 (reproduced below) places a bar on negotiations:


"Bar on Negotiations- Save as otherwise provided there shall be no negotiations with the bidder having submitted the lowest evaluated bid or with any other bidder."

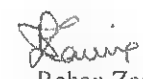
13. Under the circumstances, the Selection Committee, therefore, discussed the option of invoking the provision of Section 21 of the Sindh Public Procurement Act 2009 for exemption from applicability of SPPRA Rule 52 enabling the Procuring Agency to enter into negotiations with the bidders to rationalize the bids with respect to the Cost Estimate prepared by M/s NESPAK.

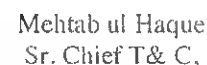
14. The Selection Committee, therefore, recommended to approach Sindh Public Procurement Regulatory Authority for seeking approval of the Government for exemption from applicability of SPPRA Rule 52 on the procurement process for development of BRT Orange Line Project (Infrastructure Development), pursuant to Section 21 of the Sindh Public Procurement Act 2009, with a view to negotiate and rationalize the bids in question, item wise with respect to the Cost Estimate.


  
Fazal Karim Khatri  
Director (P&C) KMTC,  
Transport & Mass Transit  
Department, GoS


  
Ali Shah Mirani  
Deputy Secretary  
Transport & Mass Transit  
Department, GoS

  
Moazzam Ali Marri  
Deputy Secretary (Dev. II)  
Finance Department,  
Government of Sindh


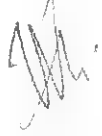



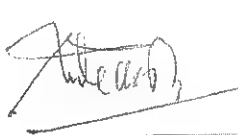
  
Rehan Zamin  
Principal Engineer  
NESPAK

  
Mehtab ul Haque  
Sr. Chief T& C,  
Planning & Development  
Department, GoS

  
S.M. Taha  
Chief Engineer (TCD)  
Karachi Metropolitan  
Corporation

  
Muhammad Athar  
Director General (KMTC)  
Transport & Mass Transit  
Department, GoS

**MEETING OF CONSULTANT SELECTION COMMITTEE FOR EPC  
CONTRACT(INFRASTRUCTURE DEVELOPMENT) FOR BRT ORANGE LINE ON  
DATED. 05-11-2015 AT 03.00 IN THE COMMITTEE OF TRANSPORT & MTD**

S.No.	Name & Designation	Signature	Cell No. & Email Add.
1.	Mr. Muhammad Ather, DG KMTC		
2.	Mr. Fazal Karim Khatri, Director (P&C) KMTC, T&MTD		
3.	Sr. Chief T&C, P&D Department		
4.	Mr. Ali Sher Mirani, Deputy Secretary T&MTD		
5.	Mr. Moazzam Ali Marri, Deputy Secretary, Finance Department		
6.	M/S NESPAK REHAN ZAMAN		
7.	Sr. Director T.C.D. Rep S <sup>M</sup> Taha (T&C) LMC		
8.			



NO. KMTC/TMTD/BRT-OL/2015/ 372  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
GOVERNMENT OF SINDH  
Karachi, dated December 17, 2015

Mr. Rehan Zamin,  
Principal Engineer,  
NESPAK, Karachi

Subject: BUS RAPID TRANSIT SYSTEM (BRTS) ORANGE LINE  
(INFRASTRUCTURE DEVELOPMENT)

As per the recommendation of the designated Selection Committee, and approval of the competent authority, the bidding process of BRTS Orange Line (Infrastructure Development) EPC Contract has been cancelled in accordance with the provision of SPPRA rule 25(1).

As discussed earlier, it would be appreciated if you can undertake the work of detail design immediately.

Addendum to your contract shall be finalized subsequently.

  
FAZAL KARIM KHATRI  
Project Director  
PMU BRT Orange Line

c.c. to:

- DG KMTC, Transport & Mass Transit Department, GoS, Karachi
- P.S. to Secretary, Transport & Mass Transit, Department, GoS, Karachi



Tele. 021-99230665  
Fax. 021-99231153

201

**No. KMTC/TMTD/BRT-OL/2016/90**  
**GOVERNMENT OF SINDH**  
**TRANSPORT & MASS TRANSIT**  
**DEPARTMENT**  
Dated May 09, 2016


Mr. Rehan Zamin  
Principle Engineer  
Roads, Bridges & Highways,  
M/s. NESPAK (Pvt.) Ltd,  
Karachi.

**ACCEPTANCE LETTER**

Subject: **VETTING AND SUPERVISION CONSULTANCY SERVICES FOR BUS RAPID TRANSIT SYSTEM (BRTS) ORANGE LINE – ADDITIONAL WORK.**

The Competent authority has been pleased to accept your Revised Fee Proposal amounting to Rs.29821000/- with an increase amount of Rs.3888779/- against original cost of Rs.25932201/- for the above subjected work.

You are therefore, requested to execute proper Amendment-I in the original Contract Agreement with Project Director, BRT Orange Line, TMTD, GOS on a revenue stamp paper equal to 0.35% of revised cost of work i.e. Rs.13611/- (Rupees Thirteen Thousand Six Hundred & Eleven Only) at the earliest please.

  
Engr. Syed Muhammad Taha 9/5/2016  
Deputy Project Director  
BRT-Orange Line (PMU)  
T&MTD, GOS

Copy to:

- (i) Director General, KMTC, TMTD, GOS.
- (ii) Project Director (PMU) BRT – Orange Line, T&MTD, GOS.
- (iii) Project Engineer (PMU) BRT – Orange Line, T&MTD, GOS.
- (iv) PS to Secretary, TMTD, GOS.

# NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED

3th Floor, NICL Building, Abbasi Shaheed Road, Off Shahrah-e-Faisal, Karachi - 74400, Pakistan.



P-33026/50A/AH/01/383

December 21, 2015

**Fazal Karim Khatri**  
Project Director  
PMU BRT Orange Line  
Transport & Mass Transit Department  
6<sup>th</sup> Floor, East Annex, Civic Center  
Karachi.

**Vetting and Supervision Consultancy Services for Bus Rapid Transit – Orange Line**  
- Scope of Services and Fee Proposal for Additional Work Detail Design

Dear Sir,

This is with reference to your letter nos. KMTTC/TMTD/BRTS/OL/2015/362 and 372 dated December 14 and 17, 2015, respectively, through which you have intimated that the Selection Committee has canceled the bidding process (under EPC mode) and that the competent authority desires that M/s NESPAK undertake the detail design and construction supervision of a signal free BRT corridor.

We will be pleased to provide the requisite services. In this regard, kindly note that the original financial proposal given to you was for the vetting and supervision services of an at-grade BRT corridor development on EPC basis.

We have now been advised to undertake the detail design and construction supervision of the project on conventional design-build basis. Furthermore, a major portion of the corridor is now to be elevated. This will entail extra inputs for our services.

Additionally, at your instructions, we have already undertaken the design of watermain relocation works including tender documents and bid evaluation, which was not part of the original scope of services.

The additional scope of work shall be as follows:

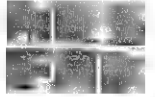
1. Carry out topographic survey, environmental monitoring and geotechnical investigations,
2. Detail Design of at-grade and elevated BRT corridor including stations and Depot,
3. Carry out an Environmental Impact Assessment (EIA),
4. Preparation of Bidding Documents and Bid Evaluation,
5. Design of Watermain Relocation Plans and tender documents, and
6. Construction Supervision works (excluding watermain relocation works).

*Anali*

(Contd. P. 2)

Phone : +92-21-99090000 & 99225277 - 84 (08 Lines)  
Fax : +92-21-35651994, 99225366, P.O. Box: 5772  
E-mail : karachi@nespak.com.pk, nespakkh@gmail.com  
Website : www.nespak.com.pk

**TÜV**  
AUSTRIA



The reduction in original scope of work, as discussed with your good self, shall include the following:

1. Vetting of Design,
2. Review of Intelligent Transportation System (ITS) Plan, and
3. Provision of two (02) Engineers to the Client.

The additional fee for the revised / additional work (after reduction in the original scope of work) shall be Rs. 10,363,340/- (*Pak Rupees Ten Million Three Hundred and Sixty Three Thousand Three Hundred and Forty only*). The fee breakup for the additional work inclusive of all taxes is as follows:

S. No.	Description	Fee (PKR)
1	Original Fee (inclusive of SST)	25,932,201/-
2	Additional Fee due to change in Scope of Work (inclusive of SST)	20,984,833/-
3	Reduction in Original Scope of Work (inclusive of SST)	10,621,493/-
4	Revised Fee (inclusive of SST)	36,295,541/-
<b>Total Additional Fee (inclusive of SST @ 14%)</b>		<b>10,363,340/-</b>

Your approval of the above fee for revised / additional work is requested at the earliest.

Thanking you and assuring you of our best professional services at all times.

Sincerely,

For, National Engineering Services Pakistan (Pvt.) Limited

Ahmad Halim  
Vice President

Cc: DG KMTC, TMTD, GoS



Tele. 021-99230665  
Fax. 021-99231153

ANNEXURE - 11

No. KMTC/TMTD/BRT-OL/2016/14  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
Dated: 08-01-2016

Project Manager  
Roads, Bridges & Highways,  
M/s. NESPAK (Pvt) Ltd,  
13<sup>th</sup> Floor NICL Building,  
Abbasi Shaheed Road, off Sharah-e-Faisal,  
Karachi.

Subject: **BUS RAPID TRANSIT SYSTEM (BRTS) ORANGE LINE  
INFRASTRUCTURE DEVELOPMENT**

Your reference letter No.P-33026/50P/RZ/01/971 dated 30-12-2015, the alignment configuration of the BRT Orange Line project is principally agreed and requested to please take up the Task of design of infrastructure work and preparation of Tender documents as early as possible, so that the bidding process be completed.

Regarding the additional fee as claimed vide reference letter No.P-33026/50A/AH/01/383 dated 21-12-2015 it is clarified that the same will be communicated after detail evaluation of the modified Scope of work, as per provisions of the consultancy agreement and in accordance with SPPRA Rules 2010 amended 2013.

  
Project Director  
BRT – Orange Line Project

Copy to:

- (i) The Secretary, Transport & Mass Transit Dept., GOS, Karachi.
- (ii) Director General, Transport & Mass Transit Dept., GOS, Karachi.
- (iii) Deputy Project Director, Transport & Mass Transit Dept., GOS, Karachi.



No. KMTC/TMTD/BRTS/OL/2015/ 362  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
Dated 14-12-2015

Tele. 021-99211017

Fax. 021-99211298


Engr. Rehan Zamin

Principal Engineer (Roads, Bridges & Highways),  
NESPAK, Karachi.

Subject: REVISED BRT ORANGE LINE DESIGN – SIGNAL FREE CORRIDOR

Your kind attention is invited to the PC-1 and Feasibility report of BRT Orange Line Project whereby it was proposed for At Grade infrastructure for the subject project. This appears to be un-appropriate in view of the prevailing Traffic volume, particularly at intersections of Abdullah College, Pone panch Chowrangi and Panch no. chowrangi, which may increase in traffic violation and decrease the speed of BRT system.

In view of above and for smooth and un-interrupted BRT operation, it is suggested that Infrastructure for this project be designed signal free BRT Line using various options like underpasses/elevated etc.

  
Fazal Karim Khatri  
Director (P&C)

Copy to:

- 1) Director General, KMTC, TMTD, GoS
- 2) PS to Secretary, Transport and Mass Transit Department, GoS.

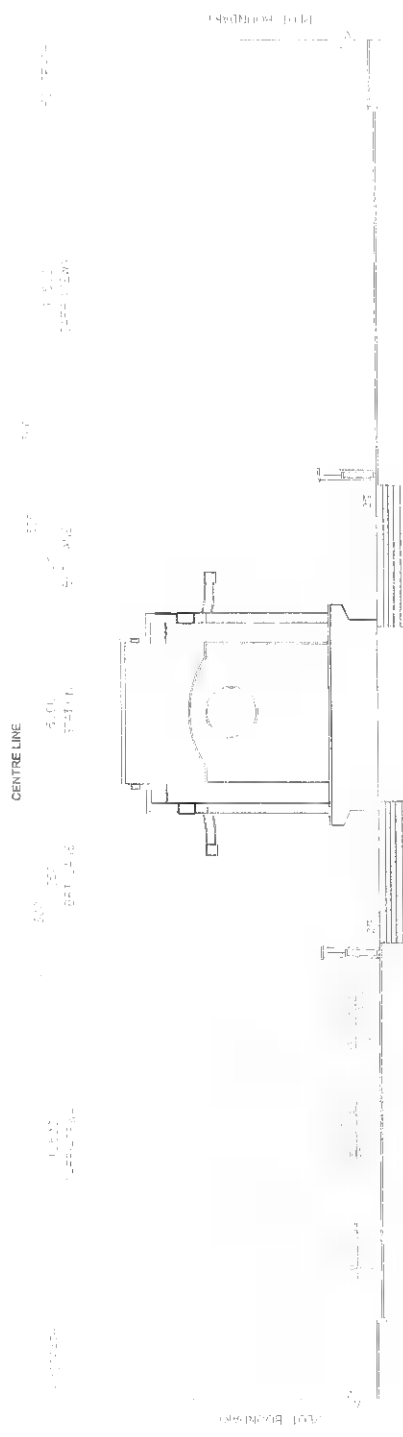


SECTION 1  
(SEGMENT-2)  
(0+000 TO 0+418)

BRT STATION  
(SEGMENT-2)



ABUTMENT SECTION 2  
(SEGMENT-2)  
(0+418 TO 0+582.42)



BRT STATION



SECTION (SEGMENT-2) 3  
(0+582.42 TO 0+800)



PROPOSED SECTION 1  
(1+202.15 TO 2+790)



PROPOSED SECTION 2  
(2+790 TO 2+885)



PROPOSED SECTION 3  
(2+885 TO 3+420)



# TRANSPORT AND MASS TRANSIT DEPARTMENT

## GOVERNMENT OF SINDH

### BUS RAPID TRANSIT SYSTEM (BRTS)

### "ORANGE LINE"

### INFRASTRUCTURE DEVELOPMENT

### 3-D VIEWS OF STATION AND DEPOT

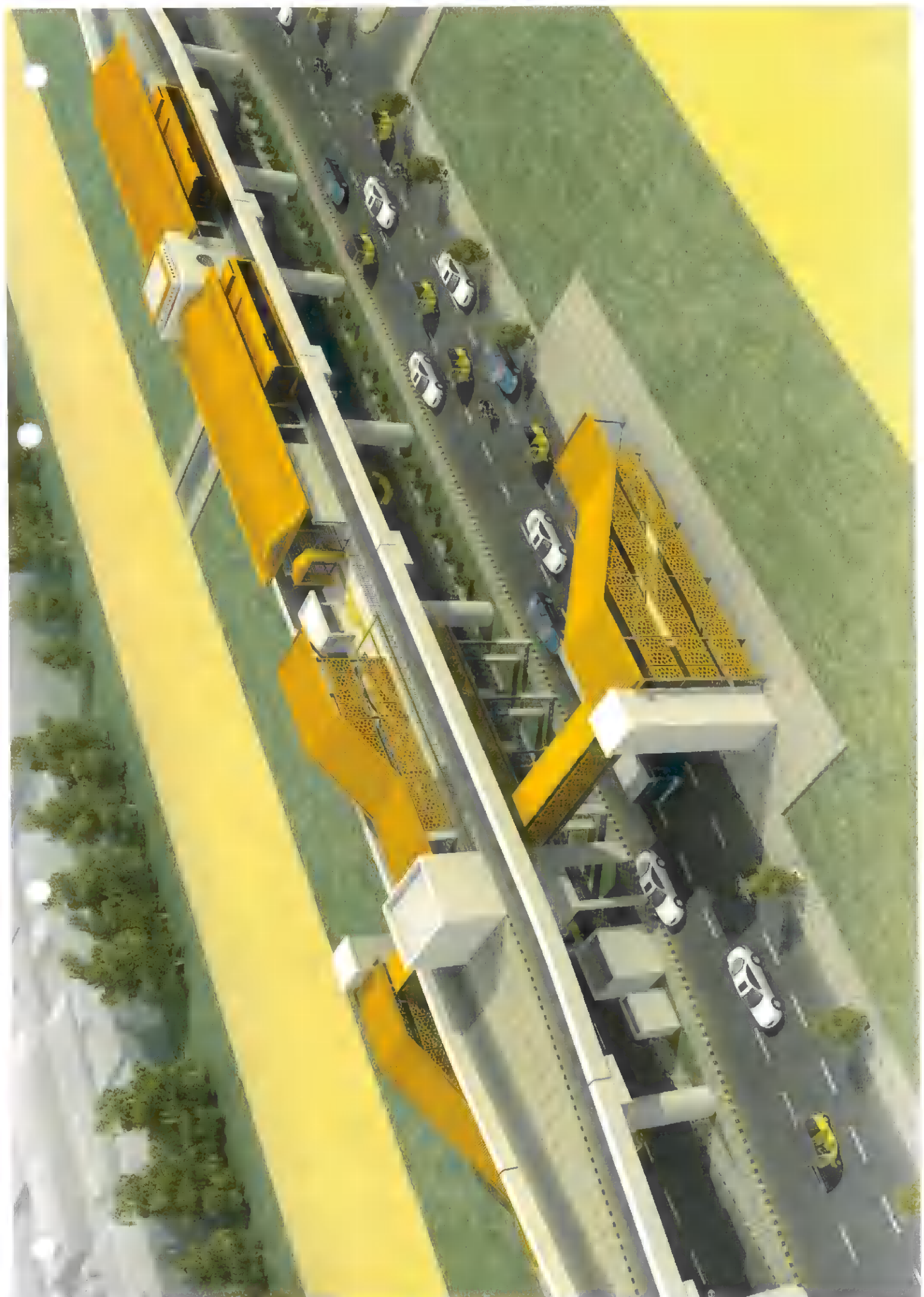


**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LIMITED**  
13th Floor, N.I.C. Building, Abbasi Shaheed Road, Off Shahra-e-Faisal, Karachi-75300  
P. O. Box 5772, Karachi, Pakistan  
-mail: nespakkh@khi.wol.net.pk, [Karachi@nespak.com.pk](mailto:Karachi@nespak.com.pk) Website: [www.nespak.com.pk](http://www.nespak.com.pk)











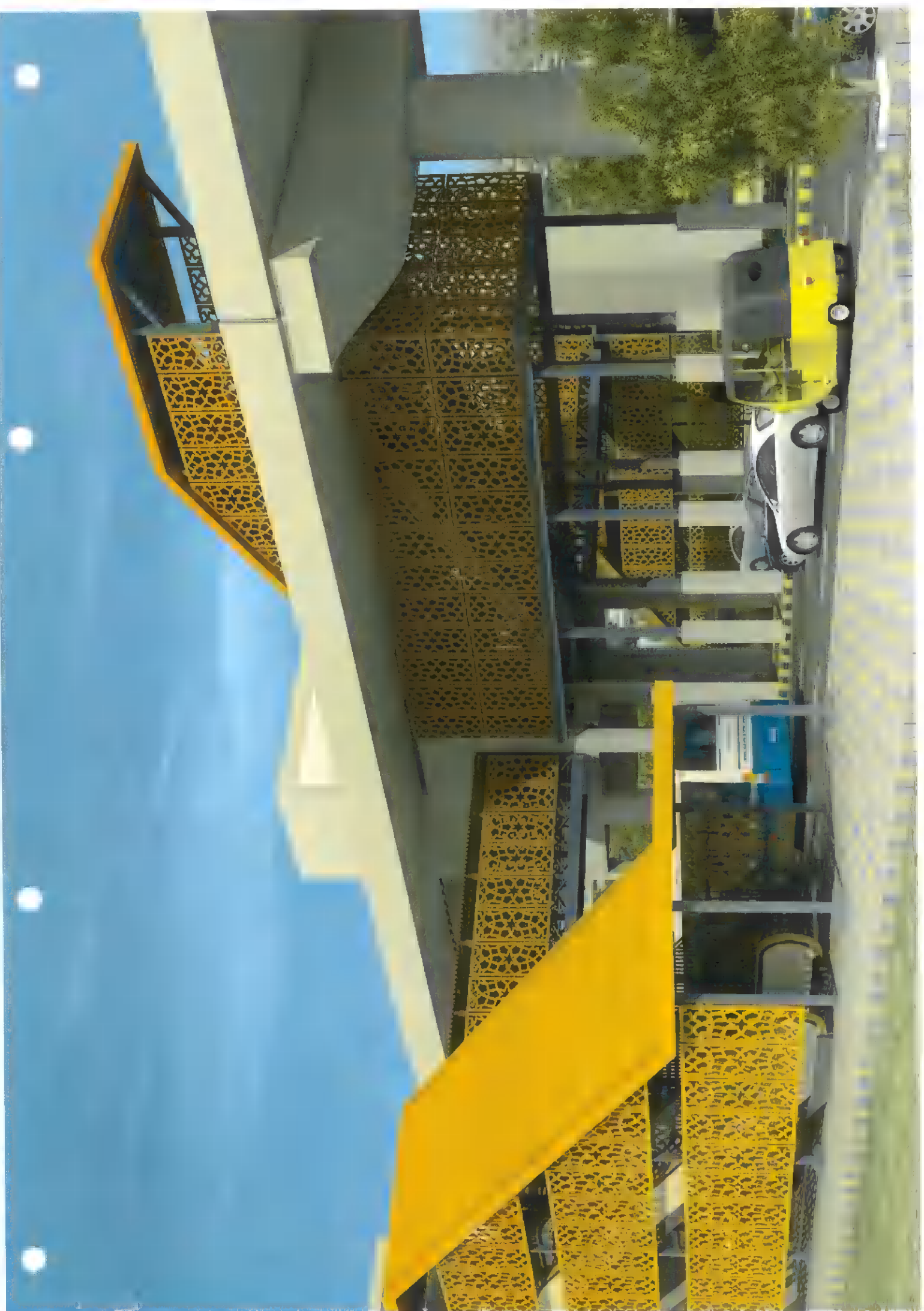




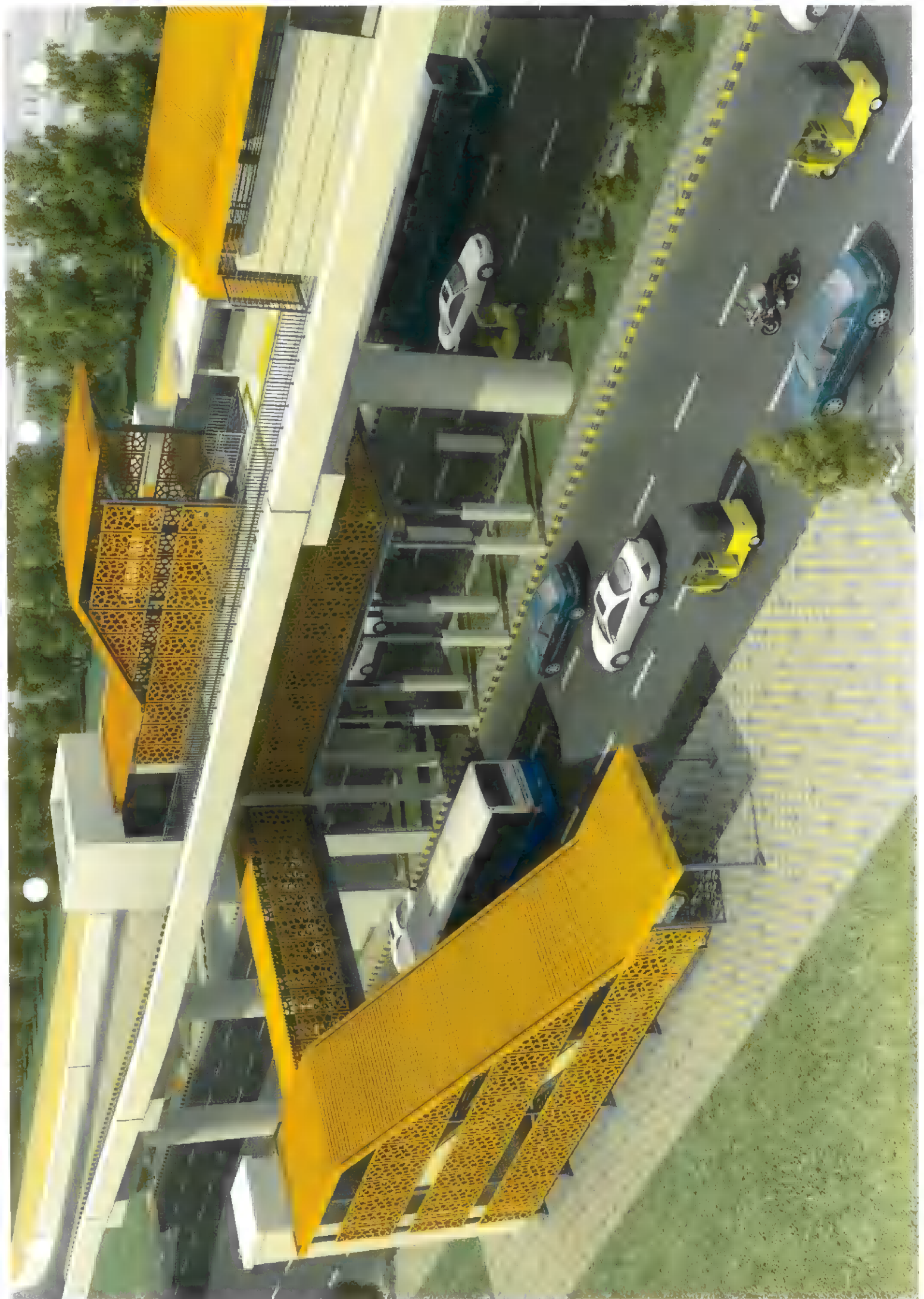


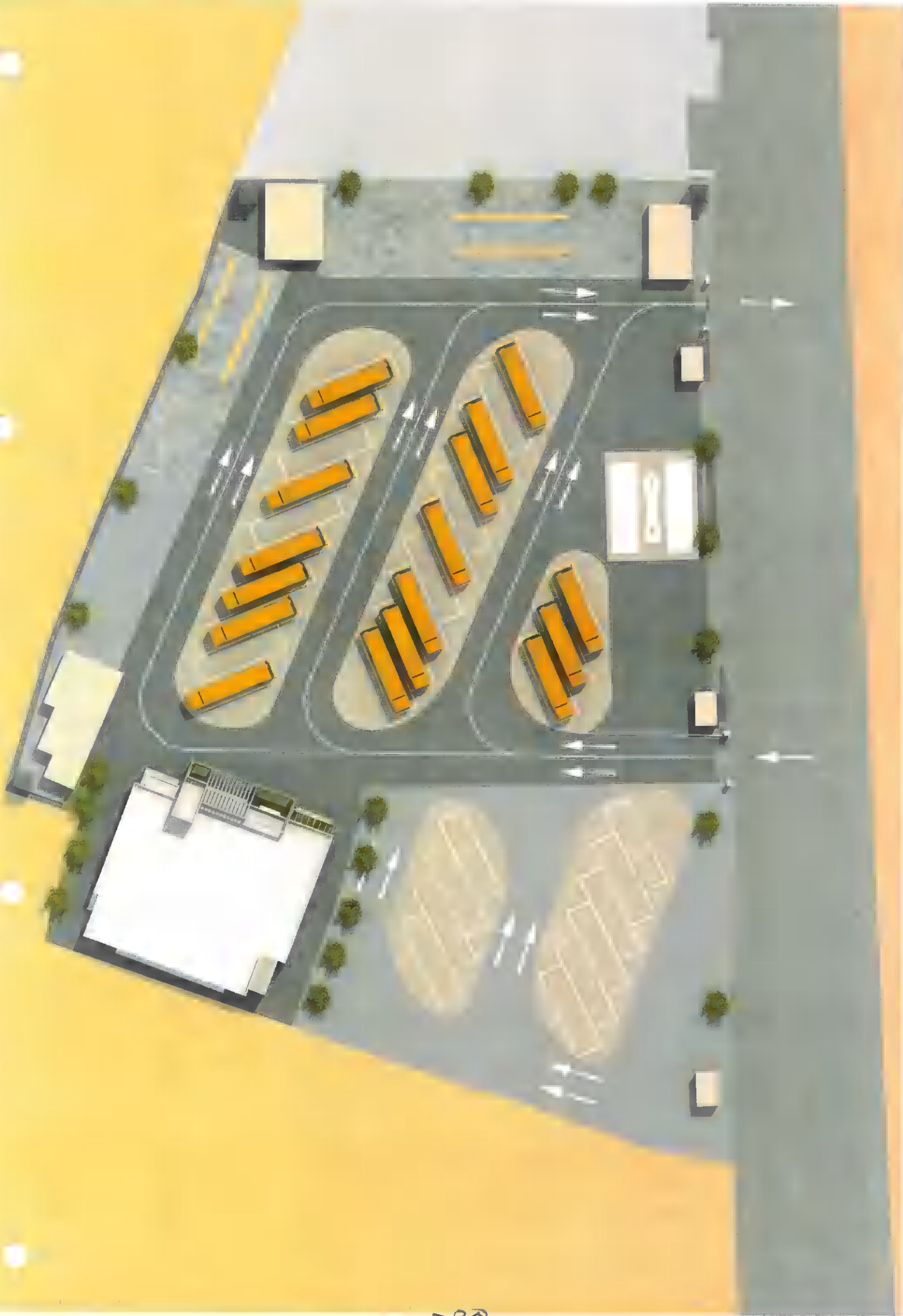














042





202











3771/50P/RZ/01/1022

March 25, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Preliminary Geotechnical Investigation Report

Dear Sir,

This is with reference to the preliminary geotechnical investigation report submitted to NESPAK via email on March 10, 2016, for the subject project.

We have reviewed the report and our comments on the subject report are as under:

- 1) The depth of BH-11 was 30m as indicated in the revised geotechnical investigation program submitted by NESPAK vide our letter no. 3771/50P/RZ/01/996 dated February 10, 2016. However, the Contractor has carried out the investigation of BH-11 up to 15m,
- 2) The Contractor has moved the location of bore holes and test pits as indicated in the above referred letter. Coordinates of the same are required,
- 3) Liquefaction and Swell Potential are not discussed in the report,
- 4) Allowable bearing capacity for strip foundation and piles is not provided,
- 5) Test results for three Point Soaked CBR and recommended CBR value are not included in the report, and
- 6) In Para 3.7, it is stated that groundwater table was not encountered within the explored depth of 15 m, however, in Para 4.4 it is discussed that the type of cement is selected based on groundwater table encountered. A clarification is required in this regard.

This is submitted for your further necessary action.

Sincerely,

for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

- Cc: - Secretary, Transport & Mass Transit Department, GoS  
- Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi



3771/50P/RZ/01/1019

March 21, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Board Office Interchange & Station Design

Dear Sir,

This is with reference to our phone conversation held on March 18, 2016 through which you instructed the undersigned to contact the BRTS Green Line consultant, for the subject project.

Accordingly, a phone conversation with the Project Manager of the BRTS Green Line consultant was held on March 21, 2016. Salient points of the conversation are hereby reproduced for your record:

1. **Interchange at Board Office:** The design of the interchange has been finalized by the consultant of BRTS Green Line. The same shall be provided to NESPAK.
2. **Bus Station Design:** It was communicated to NESPAK that the architectural drawings of the station were not complete and, therefore, the station design has not started as yet. The Prime Minister has not given approval of the preferred concept, which will be needed to finalize the architectural drawings. It will take the BRTS Green Line consultant 2-3 months to finalize the station design once the approval is accorded by the Prime Minister.

The decision to standardize bus station design of Green and Orange Lines BRTS (which interface at Board Office) was taken by TMTD and it was agreed that TMTD will provide NESPAK with the approved station design / related infrastructure design along with soft copy (dwg) of drawings, specifications and calculations of at-grade / elevated stations. However, as the bus station design is not available, the deadline for Package I & II cannot be met.

As already communicated to you vide our letter no. 3771/50P/RZ/01/1014 dated March 4, 2016, it will take NESPAK three (3) weeks to finalize the tender documents after station design is received.

This is submitted for your further necessary action and advice.

Sincerely,

for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

Cc: - Secretary, Transport & Mass Transit Department, GoS  
- Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi

3771/50P/RZ/01/1014

March 4, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Progress Review Meeting held on March 3, 2016

Dear Sir,

This is with reference to the meeting held to review the progress of the project chaired by DG KMTC and attended by your good self and the undersigned on March 3, 2016, for the subject project.

The following was discussed in the meeting:

1. **Revised Fee Proposal:** NESPAK had submitted its revised fee proposal vide letter no. 3771/50P/RZ/01/1007 dated February 24, 2016.

TMTD informed that it will convey its confirmation of acceptance of the revised / additional fee by March 4, 2016.

2. **Bus Station Design:** The decision to standardize bus station design of Green and Orange Lines BRTS (which interface at Board Office) was taken by TMTD and it was agreed that TMTD will provide NESPAK with the approved station design / related infrastructure design along with the soft copy (dwg) of drawings, specifications and calculations of at-grade and elevated stations.

TMTD will discuss the issue with Consultants of Green Line BRTS and provide the design to NESPAK, after which NESPAK will finalize the tender documents in three (3) weeks.

3. **Interchange at Board Office:** The concept design of the interchange has been provided to NESPAK. However, NESPAK has not received the final design of the Board Office interchange from the Consultants of Green Line BRTS.

TMTD will pursue the matter with Consultants of Green Line BRTS and provide the same to NESPAK.

4. **Elevated Corridor Design:** The structural design (I-girders) of the elevated section prepared by NESPAK was shared with TMTD, and the same was approved.

5. **Bus Depot Architectural Design:** The bus depot architectural design was shared with TMTD vide our letter no. 3771/50P/RZ/01/1012 dated February 26, 2016. TMTD reviewed the same and recommended the following to be incorporated in design:

- a) Three (03) watch towers (1 at the front and 2 at the back of the depot) shall be designed,



(Contd. P. 2)

- b) The administration building will be constructed at the ground floor level; however, provision for addition of two (02) floors in the future will be incorporated in the design,
  - c) Additional washroom facilities in the administration building will be provided,
  - d) Depot lighting shall be LED based. All lighting fixtures and ceiling fans shall be provided as part of the infrastructure development package, and
  - e) Provision for CCTV cameras / ITS system installation shall be provided in the depot administration building.
6. **Environmental Monitoring:** TMTD has contracted SUPARCO to carry out the environmental monitoring for which NESPAK will provide necessary coordination.
7. **Geotechnical Investigations:** Results of bore logs will be shared with NESPAK by March 4, 2016, while the geotechnical investigation report will be shared by March 8, 2016.
8. **Widening of Orangi Nullah Bridge:** NESPAK informed TMTD that four (4) lanes of traffic (BRT lane plus three lanes of mix traffic) will be allowed on the existing bridge in each direction, for which the existing structure will be strengthened. Separate pedestrian structures on either side shall be constructed for safe pedestrian movement.

TMTD requested NESPAK to share the design for approval of the same.

9. **Utility Relocation due to Elevated Section:** The layout plan for elevated section as well as locations showing the proposed pedestrian structures was submitted to TMTD vide letter no. 3771/50P/RZ/01/1013 dated February 26, 2016 for onward submission to utility agencies.

A meeting was held with representatives of various utility agencies on March 3, 2016. A site visit with TMTD and representatives of utility agencies and NESPAK is scheduled for Tuesday, March 8, 2016 at 11 am to ascertain the impact of the proposed changes in design on existing utility services.

Sincerely,

for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

- Cc: - Secretary, Transport & Mass Transit Department, GoS  
- Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi



3771/50P/RZ/01/1001

February 12, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Revised Depot Concept Layout

Dear Sir,

This is with reference our letter no. 3771/50P/RZ/01/995 dated February 8, 2016 and your letter no. KMTC/TMTD/BRTS/OL/2016/58 dated February 10, 2016 for the subject project.

As per your instructions and understanding reached with the KP Intercity Bus Operators vide the above referenced letter dated February 10, 2016, we have reserved one-third (1/3) of the depot area to be utilized by the Transport and Mass Transit Department (TMTD). The total area available for intercity bus operations is 1.92 acre out of total depot area of 5.69 acres.

The total available space for parking of BRT Orange Line buses has now reduced to 37 (25 in Phase-I and 12 in Phase-II, subject to relocation of the existing Pirabad Police Station). It must be noted that additional parking space for BRT Orange Line buses may be required in the future, for which necessary arrangements will have to be made by TMTD.

Enclosed (Annexure-A) please find the revised depot concept layout for your review and approval.

This is submitted for your further necessary action.

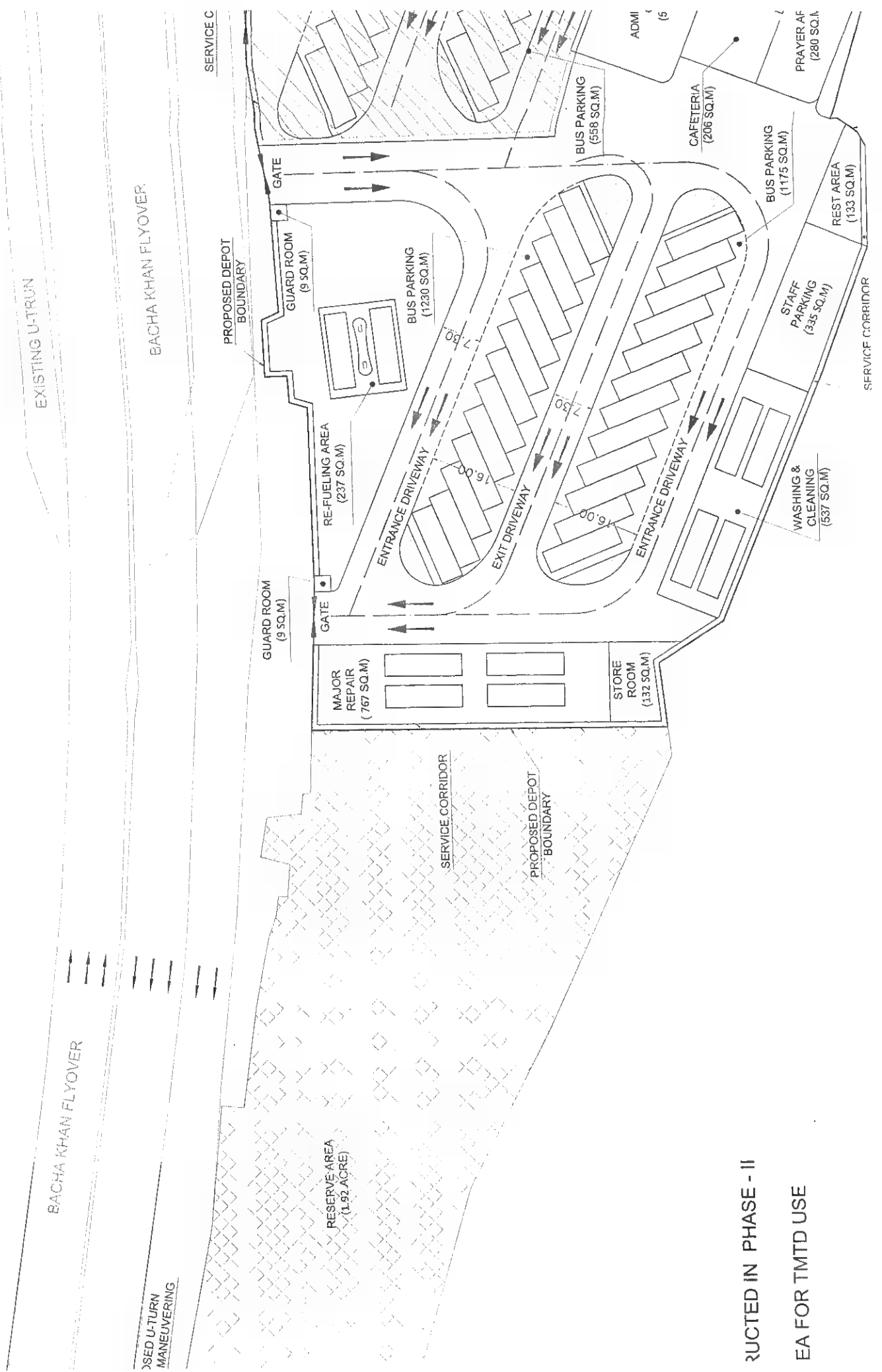
Sincerely,  
for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

Encl: As Above.

Cc: - Secretary, Transport & Mass Transit Department, GoS  
- Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi



DUCTED IN PHASE - II

EA FOR TMTD USE

3771/50P/RZ/01/1000

February 12, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center,  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development****- Environmental Monitoring**

Dear Sir,

This is with reference to our letter nos. P-33026/50A/AH/01/383 dated December 21, 2015 and 3771/50P/RZ/01/993 dated February 4, 2016 through which we provided the cost of additional fee for undertaking the detail design and Environmental Impact Assessment (EIA) for the subject project.

We have still not received confirmation of approval of our additional fee from the Transport & Mass Transit Department (TMTD). As communicated to you earlier, we need approval of the same in order for us to have third-party works carried out such as environmental monitoring.

In view of the above and the time constraints associated with the project, it is requested that Environmental Monitoring of the subject works may be outsourced directly by TMTD to the specialist firms.

Enclosed (Annexure-A) please find the Scope of Work for Environmental Monitoring to be carried out at the earliest in order for us to meet the timelines of the project. We will provide necessary assistance to TMTD for awarding this work.

Sincerely,  
for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

Encl: As Above.

Cc: - Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi

3771/50P/RZ/01/996

February 10, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Geotechnical Investigations for Package-II

Dear Sir,

This is with reference to our letter no. 3771/50P/RZ/01/994 dated February 4, 2016 and our subsequent discussion on the subject project.

Enclosed please find the revised geotechnical investigations program, specifications and Bill of Quantities (BoQ) for the investigation works to be carried out separately by TMTD for Package-II (From Banaras Flyover to Jinnah University).

This is submitted for your further necessary action.

Sincerely,

for National Engineering Services Pakistan (Pvt.) Limited

**Rehan Zamin**

Project Manager  
(Roads, Bridges and Highways)

Encl: As Above.

Cc: - Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi

3771/50P/RZ/01/994

February 4, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Geotechnical Investigations

Dear Sir,

This is with reference to the meeting held on February 2, 2016 and attended by your good self, DG KMTC, representatives of Transport & Mass Transit Department (TMTD) and NESPAK to discuss the progress for the subject project.

As discussed in the above referenced meeting, enclosed please find the geotechnical investigations program, specifications and Bill of Quantities (BoQ) for the investigation works to be carried out separately by TMTD.

Please note Annexure-A includes the program, BOQ and specifications for the complete project; Annexure-B consists of the program, BOQ and specifications for Package-I; while Annexure-C consists of the program, BOQ and specifications for Package-B.

This is submitted for your further necessary action.

Sincerely,  
for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

Encl: As Above.

Cc: - Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi

**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED**

13th Floor, NICL Building, Abbasi Shaheed Road, Off Shahrah-e-Faisal, Karachi - 74400, Pakistan.



3771/50P/RZ/01/992

February 4, 2016

**Project Director**  
 Project Management Unit (PMU)  
 Bus Rapid Transit (BRT), Orange Line  
 6th floor East Annexe, Civic Center,  
 Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Pre-qualification Documents for Package-I and II

Dear Sir,

Enclosed please find ten (10) sets each of the pre-qualification documents for the following Packages:

1. Package-I: From TMA Orangi to Bacha Khan Flyover near Banaras, and
2. Package-II: From Bacha Khan Flyover near Banaras to Board Office.

Sincerely,  
 for National Engineering Services Pakistan (Pvt.) Limited

**Rehan Zamin**  
 Project Manager  
 (Roads, Bridges and Highways)

Encl: As Above.

Cc: - Director General, KMTC, TMTD  
 - Mr. Ahmad Halim, Vice President, NESPAK, Karachi

3771/50P/RZ/01/990

February 3, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Approval / Information Required

Dear Sir,

This is with reference to the meeting held on February 2, 2016 and attended by your good self, DG KMTTC, representatives of Transport & Mass Transit Department (TMTD) and NESPAK to discuss the progress for the subject project.

As discussed in the above referenced meeting, following approval / information is pending with TMTD which is immediately required in order for us to proceed further:

1. **Bus Depot:** We have prepared two (02) concept layouts of the Bus Depot (Option I and II attached as Annexure-A). You are requested give your approval of the preferred concept.
2. **Bus Station:** TMTD provided NESPAK with two (02) proposals (prepared by other consultant) for the Green Line BRTS station, one of which is to be used for the Orange Line. Kindly confirm your approved station design and provide us with the soft copy (dwg) of drawings, specifications and calculations of at-grade and elevated station design.
3. **Interchange at Board Office:** TMTD is requested to provide us with the design of proposed interchange at Board Office (prepared by other consultant) in soft copy (dwg) format incorporating 6m station width at Jinnah University and two u-turn lanes. This information is required for coordination and interfacing of the Orange Line and Green Line BRTS.
5. **Bid / Construction Packages:** During various meetings, it was decided that the project will be divided into two (02) packages and the same was communicated to you vide our letter no. P-33026/50P/RZ/01/971 dated December 30, 2015. Accordingly, the EOI and Request for Qualification (RFQ) documents were prepared and submitted to TMTD for issuance to interested bidders. TMTD is requested to confirm if there is any change in the scope of work for each package.

This is submitted for your further necessary action.

Sincerely,  
for National Engineering Services Pakistan (Pvt.) Limited



Rehan Zamin  
Project Manager  
(Roads, Bridges and Highways)

Cc: - Director General, KMTTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi

P-33026/50P/RZ/01/971

December 30, 2015

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center,  
Gulshan-e-Iqbal, Karachi.

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**  
- Approval of Route Alignment

Dear Sir,

This is with reference to the joint field visits conducted by representatives of Transport & Mass Transit Department (TMTD) and NESPAK on December 28 and 29, 2015 to finalize the route alignment for the subject project.

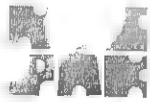
Following was discussed and mutually agreed upon during the joint field visit:

- 1) The Government of Sindh (GoS) plans to extend the BRTS into Orangi Town in the future. Due to limited Right-of-Way (ROW) available beyond TMA Orangi (towards Nishan-e-Haider Chowk), the planned extension shall be elevated. Therefore, the section between Town Municipal Administration (TMA) Orangi to Paanch no. intersection (approx. 0.53 km) should be designed as elevated section considering the future expansion of the system. The BRT station in this section will also be elevated,
- 2) The BRT section between Paanch no. intersection up to the Project End Point i.e. Jinnah University for Women (approx. 1.62 km excluding the Bacha Khan flyover) shall be constructed at-grade. The three (3) stations in this section shall also be at-grade,
- 3) The BRTS shall utilize the inside lanes of existing Bacha Khan Flyover (approx. 1.5 km). This section shall be constructed as a semi-dedicated section,
- 4) The bridge at Orangi Nullah shall be widened on either side to accommodate an additional lane for mix-traffic operations,
- 5) The existing depot near Abdullah College Roundabout shall be designed for Orange Line BRT buses,
- 6) The intersections at Pone Panch no. and Abdullah College shall be designed at-grade. Through and right turn traffic movements crossing BRT corridor i.e. Orangi Road will not be allowed. Instead this traffic will be made to turn left on Orangi Road at the intersections and then make a U-turn to travel to their destination,



(Contd. P. 2)





- 7) TMTD will provide NESPAK with the results of the geotechnical investigations conducted for Banaras Flyover and the proposed interchange near Board Office,
- 8) The Government of Sindh (GoS) has decided that the station architecture of Green Line BRTS and Orange Line BRTS shall be similar. TMTD will provide NESPAK with the soft copy of drawings and specifications of the at-grade and elevated station design for the Green Line BRTS,
- 9) Construction of the project will be divided into two (2) packages. The packages will be:
  - a. Package-I: From TMA Orangi (Project Start Point) to start of Bacha Khan flyover,
  - b. Package-II: From start of Bacha Khan flyover to Jinnah University for Women (Project End Point).
- 10) NESPAK shall provide the Pre-qualification documents for the two (02) packages to TMTD by December 31, 2015, and
- 11) NESPAK vide its letter no. P-33026/50A/AH/01/383 dated December 21, 2015 has provided TMTD with a revised fee proposal to undertake the detail design and construction supervision of the project. TMTD will send an approval letter to NESPAK for the same before detail design can proceed.

The enclosed sketch details the final route alignment with at-grade and elevated sections along with the depot and station locations. You are requested to review the same and give formal approval of the same in order for us to proceed with the design.

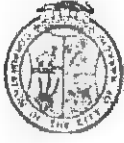
Thanking you and assuring you of our best professional services at all times.

Sincerely,  
for National Engineering Services Pakistan (Pvt.) Limited

**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

Encl: As Above.

Cc: - Director General, KMTC, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi



**KARACHI METROPOLITAN CORPORATION**  
**KARACHI MASS TRANSIT CELL**

6<sup>th</sup> Floor, East Annex, Civic Centre, University Road, Gulshan-e-Iqbal,  
Karachi-75300. (Pakistan)

Ph: 021-99230665  
021-99231281  
Fax: 021-99231153

No. No.69-1/KMTC/BRTS/2014/132

Dated: 21-11-2014

Engr. Sajjad Anwar  
Technical Expert-I (Civil Engineer),  
M/S NESPAK, Karachi

Subject: PC-I for BRT Orange Line Project

Reference: Your Letter No. 3522/50P/SA/01/380 dated: 19-11-2014 on the above subject and subsequent meeting with you on 20-11-2014 at your office attended by me, Mr. Abdul Rasheed Mughal and Mirza Anawar Baig, Consultant KMTC, KMC

The study of the PC-I document reveals the following observations:

- 1) On the title page (feeder service to the Green Line BRTS) be deleted.
- 2) Reference to item 5 (1) of the PC-I, it is clarified that Orange Line is a full-fledged BRT line as recommended by JICA in Mass Transit Scheme. Further, this line will ensure connectivity and accessibility to KCR service and Green Line BRT by facilitating the commuters residing in far flung areas of Orangi Town.
- 3) Since the proposed project would be economically viable but may not be commercially viable, therefore, steps need to be taken to make this project commercially viable ensuring affordability and sustainability of the project. In this connection, it has been observed that the potential commuters residing in far flung areas of Orangi Town may only be able to use the proposed Orange Line through feeder service which will impose transfer penalty to the said commuters by travelling additional 2.26 km distance. It is, therefore, recommended that the proposed Orange Line be extended up to Nishan-e-Haider Chowk and return through Islam Chowk, Discommore, Shahra-e-Qaddafi, Sohni Chowk and Kamal Petrol Pump as mix service by 2.26 km road improvement and construction of a few stations, besides, induction of buses of both sides opening. This will not only increase the ridership of the proposed line but also generate more revenue to make it commercially viable. Moreover, the face value of the said area and catchment spaces would be drastically enhanced (Copy of the proposed amended network is enclosed).

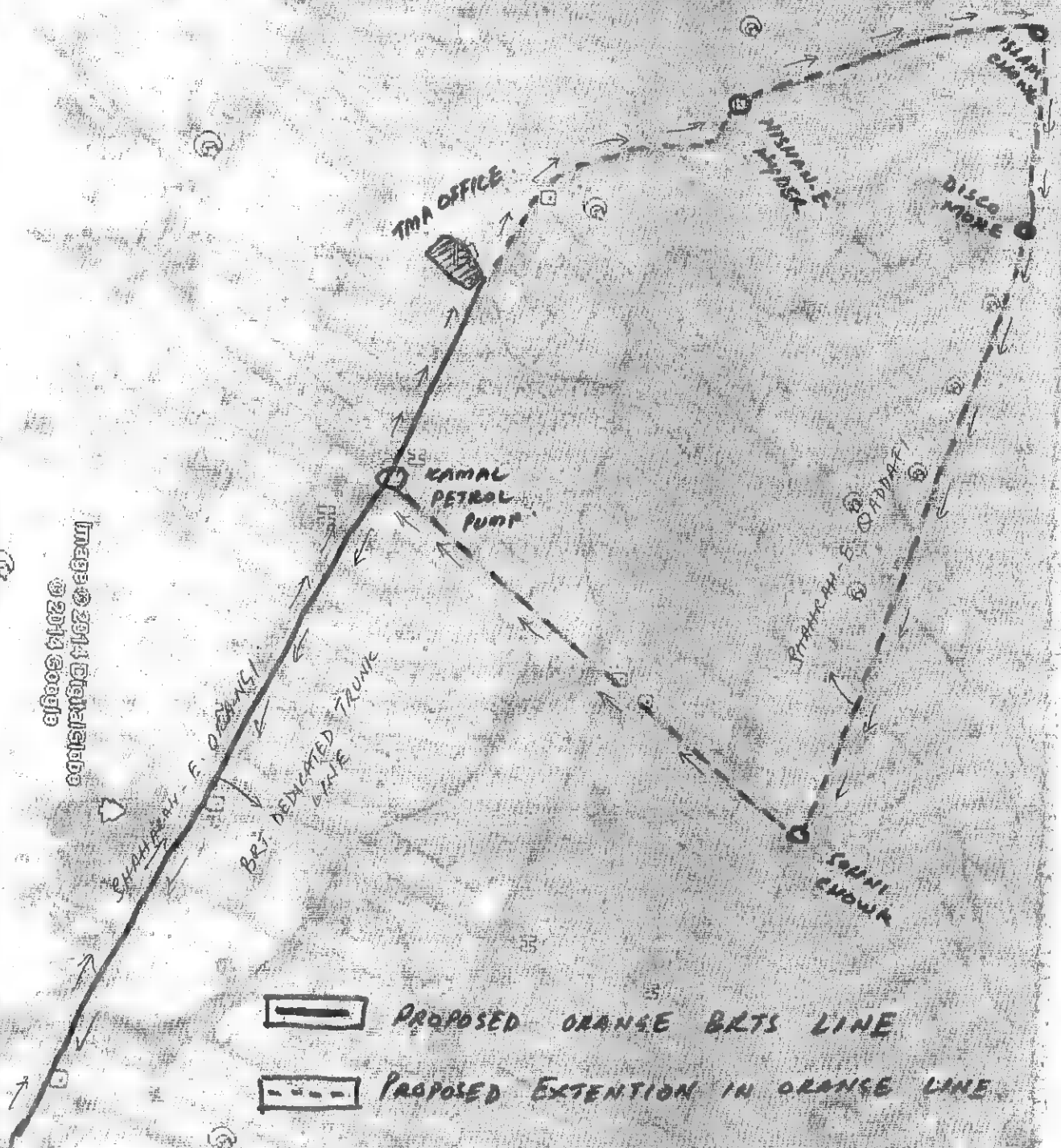
You are, therefore, request to please amend the PC-I accordingly.

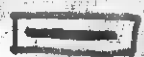

  
Fazal Karim Khatri  
Director (P&C)

Copy to:

- 1) Director General, KMTC, KMC
- 2) PS to Secretary Transport and Mass Transit, GoS
- 3) Engr. Abdul Rasheed Mughal, Consultant, KMTC, KMC

# PROPOSED EXTENSION LOPE IN ORANGE LINE BRTS



-  PROPOSED ORANGE BRTS LINE
-  PROPOSED EXTENSION IN ORANGE LINE

Imagery © 2014 DigitalGlobe  
© 2014 Google

Imagery Date: 10/4/2014 24:56:33 P.N. 67°00'14.02"E elev. 147m

3771/50P/RZ/01/1042

April 28, 2016

**Project Director**

Project Management Unit (PMU)  
 Bus Rapid Transit (BRT), Orange Line  
 6th floor East Annexe, Civic Center  
 Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Environmental Impact Assessment

Dear Sir,

This is with reference to Amendment no. 01 to the Consultancy Contract submitted to you vide our letter no. 3771/50P/RZ/01/1038 dated April 21, 2016, for the subject works.

Enclosed please find the following documents for your review / record and onward submission to Sindh EPA:

1. Eleven (11) copies of draft EIA Report; one for your review / record and remaining ten (10) copies for Sindh EPA,
2. Three (03) soft copies of draft EIA Report; one for your review / record and remaining two (02) copies for Sindh EPA,
3. Application in the form prescribed in Schedule-V to be submitted to Sindh EPA, and
4. Draft letter to DG EPA Sindh to be sent by PMU (TMTD, GoS).

Please note that the Client (PMU, TMTD, GoS) has to arrange a Pay order (review fees) amounting Rs. 200,000/- in the name of "Director General, Environmental Protection Agency, Sindh" along with the documents.

This is for your further necessary action please.

Sincerely,

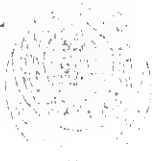
for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
 Project Manager  
 (Roads, Bridges and Highways)

Encl: As Above

- Cc: - Director General, KMTC, TMTD  
 - Mr. Ahmad Halim, Vice President, NESPAK, Karachi  
 - S. Ali Sher Shah, Senior Engineer, NESPAK, Karachi



No. KMTC/TMTD/BRT-OL/2015/ 84  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT

Dated December 04, 2015

Tele: 021-99230065

Fax: 021-99230053


M/s. Shailik Hayat & Brothers  
17-D, 48<sup>th</sup> Street, Block-6, P.O. CHS,  
Karachi

### ACCEPTANCE LETTER

Subject: TENDER FOR CONSTRUCTION OF WATER TRUNK MAIN LINE FROM TOWN MUNICIPAL ADMINISTRATION (TMA) TO BOARD OFFICE CHOWRANGI FOR BRT ORANGE LINE.

The Competent Authority has been pleased to accept your tender for the "Work of Construction of Water Trunk Main Line From Town Municipal Administration (TMA) to Board Office Chowrang for BRT Orange Line" opened on 15-09-2015 amounting to Rs.74140982/= (Rupees Seven Crore Forty One Lac Forty Thousand Nine Hundred & Eighty Two only).

You are therefore, requested to execute proper agreement with Project Director (PMU) BRT - Orange Line, Transport & Mass Transit Department, GOS on a revenue stamp paper equal to 0.35% of cost of work i.e. Rs.259493/= (Rupees Two Lac Fifty Nine Thousand Four Hundred & Ninety Three Only) within three days.

  
Deputy Project Director  
BRT-Orange Line  
Transport & Mass Transit Dept.,  
Government of Sindh  
4/12/2015

Copy to:

- (i) Director General, KMTC, TMTD, GOS.
- (ii) Project Director (PMU) BRT - Orange Line, T&MTD, GOS
- (iii) Project Engineer (PMU) BRT - Orange Line, T&MTD, GOS
- (iv) PS to Secretary, TMTD, GOS.
- (v) Principal Engineer, (Roads, Bridges & Highways), M/s. NESPAK (Consultant).

\$





No. KMTC/TMTD/BRT-OL/340  
Government of Sindh  
Transport & Mass Transit Department  
Dated: 18-03-2016

M/S Sheikh Hayat Khan and Brothers,  
47-D, 48<sup>th</sup> Street, Block-6, PECHS,  
Karachi

**SUBJECT: CONSTRUCTION OF WATER TRUNK MAIN LINE FROM TMA OFFICE TO BOARD  
OFFICE CHOWRANGI BRT ORANGE LINE**


The contract value of the above work was Rs. 74140982/- but during execution, quantity of some items have been exceeded and work is to be completed / finalized at a cost of Rs. 84461856/-, therefore stamp duty on excess amount is to be paid by you. Detail is as under

1. Completion Cost	Rs. 84461856/-
2. Original Work Order Amount	Rs. 74140982/-
Excess	Rs. 10320874/-

Stamp @ 0.35% on  
Excess amount

Rs. 36124/-

You are requested to provide revenue stamps amounting to Rs. 36124/- @ 0.35% of the excess amount.

  
Deputy Project Director  
BRT-Orange Line  
Transport & Mass Transit Dept.,  
Government of Sindh

Copy to :-

1. Project Director, BRT, Orange Line
2. Project Engineer, BRT, Orange Line
3. P.S. to Director General SMTA.

No. KMTC/TMTD/BRT-OL/2015/33  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT  
Dated October 29, 2015

Bid Evaluation Report

Tele: 021-99230665  
Fax: 021-99231153

Agency

Reference No.

Description / Name of work / Item

Published Corrigendum

and

Opening Date

Only technically qualified

Report

ated cost

valuation Report

Karachi Mass Transit Cell, Transport & Mass Transit Department  
Government of Sindh  
INF-KRY-No 2953/15

Construction of Water Treatment Main from Town Municipal  
Administration (TMA) to Board Office Chowrang  
Daily Lang and Express Tribune 21<sup>st</sup> and 20<sup>th</sup> August 2015  
respectively and Corrigendum on September 19, 2015  
and September 20, 2015 in Express Tribune Roznama Pakistan  
and Daily Lang respectively also published on SPUR6 Vol. 3 & 2  
vide notice No.

42 Nos.

08 Nos.

15-09-2015

06 Nos.

02 Nos. (As per preliminary evaluation by the Consultant)  
Rs. 80,896,999/-

Name of Firm of Bidder

	Price Offered	Arithmetically corrected price	%age Variation with Engineer's Estimate	Remarks
Sheikh Hayat & Brothers	74,140,982/-	74,140,982/-	-	1 <sup>st</sup> lowest
Sahai Enterprises	77,935,516/-	77,935,516/-	+17.82%	2 <sup>nd</sup> lowest
Ali & Company	87,843,432/-	87,850,780/-	+18.19%	3 <sup>rd</sup> lowest
Ali & Associates	104,880,432/-	104,880,432/-	+2.15%	4 <sup>th</sup> lowest
Ali & Brothers	109,120,976/-	109,120,976/-	+16.82%	5 <sup>th</sup> lowest
Ali & Brothers	147,000,000/-	147,000,000/-	+41.84%	6 <sup>th</sup> lowest
Ali & Brothers	Not quoted		+53.73%	
Ali & Co	Not quoted			

Conclusion:

As evaluated, the 1<sup>st</sup> lowest bidder M/s Sheikh Hayat & Brothers offering cost amounting Rs. 74,140,982/- is recommended for the award of work as per the Rules 2010 as amended in due course of time.

Fazal Karim Khatri  
Project Director  
MU BRT Orange Line,  
& Mass Transit Department,  
Government of Sindh

Muhammad Ali Marri  
Deputy Secretary Finance  
Government of Sindh

1 Zamin (Principal Engineer)  
PAK Pvt. Ltd (Consultant)

Syed Muhammad Taha  
Chief Engineer/ Dy. Project Director  
PMU BRT Orange Line,  
Transport & Mass Transit Department,  
Government of Sindh

Muhammad Athar  
Director General  
KMTC, Transport & Mass Transit  
Department, Government of Sindh

1 Zamin (Principal Engineer)  
PAK Pvt. Ltd (Consultant)

3771/50P/RZ/01/1007

February 24, 2016

**Project Director**

Project Management Unit (PMU)  
Bus Rapid Transit (BRT), Orange Line  
6th floor East Annexe, Civic Center  
Gulshan-e-Iqbal, Karachi

**Bus Rapid Transit System (BRTS) Orange Line - Infrastructure Development**

- Approval / Action / Information Required

Dear Sir,

This is with reference to our letter no. 3771/50P/RZ/01/1006 dated February 19, 2016, your response vide letter no. KMTC/TMTD/BRT-OL/2016/64 dated February 19, 2016 and the subsequent meeting chaired by DG KMTC and attended by your good self and the undersigned on February 22, 2016, for the subject project.

The following is highlighted for necessary action by TMTD / NESPAK:

1. **Revised Fee Proposal:** TMTD had given verbal approval of our additional fee amounting to Rs. 10,363,340/- (vide our letter no. 3771/50P/RZ/01/993 dated February 4, 2016) which includes carrying additional works [utility relocation plans (already completed), topographic survey, geotechnical investigations, detail design, tender documents, Environmental Impact Assessment (EIA), additional supervision cost] after reduction in original scope [provision of two (02) engineers to TMTD, Vetting of Design and ITS Plan Review].

After excluding the geotechnical investigations and environmental monitoring (now being undertaken directly by TMTD), our revised fee for additional works comes to Rs. 7,707,140/-. Curtailing our additional fee to within 15% variation (Rs. 3,888,799/-) from original fee, as desired by you, will not cover our man-month and direct costs.

However, keeping in view the very special nature of this project for the city of Karachi and in the best interest of facilitating work, we agree to this reduction in fee provided that geotechnical investigations and environmental monitoring are paid for directly by TMTD and complete design of bus station/related infrastructure along with soft copy (dwg) of drawings, specifications & calculations of at-grade/elevated stations, are provided to us.

You are requested to immediately confirm acceptance of this revised / additional fee.

2. **Bus Station Design:** The decision to standardize bus station design of Green and Orange Lines BRTS (which interface at Board Office) was taken by TMTD and it was agreed that TMTD will provide NESPAK with the approved station design / related infrastructure design along with the soft copy (dwg) of drawings, specifications and calculations of at-grade and elevated stations.

As already communicated to you several times, provision of this information is being delayed by TMTD which will impact project timelines. It is again highlighted that it will take us approximately four (4) weeks from the date of receiving the required station design to finalize the tender documents.

(Contd. P. 2)





It must also be clarified that coordination with the Green Line Consultants is the responsibility of TMTD. However, we are available for any technical assistance.

3. **Interchange at Board Office:** As stated by you vide your referred letter, the concept design of the interchange has been provided to NESPAK.

However, we have not received the final design of the Board Office interchange from the Consultants of Green Line BRTS. Provision of the same is required for interfacing of the Orange Line and Green Line BRTS design.

4. **Bus / ITS Specifications:** It was decided that NESPAK will submit cross-sections showing proposed ducts for Intelligent Transportation System (ITS) along the corridor (excluding stations) to TMTD for onward submission by TMTD to the Consultants selected to undertake the Integrated Intelligent Transportation System (IITS) study for Green and Orange Line BRTS.

The required information will be submitted to TMTD by February 26, 2016. TMTD is requested to ensure ITS requirements are provided to NESPAK latest by March 7, 2016.

5. **Environmental Monitoring:** We have submitted the required information to TMTD. TMTD is requested to ensure that the Environmental Monitoring Data Report is submitted by March 2, 2016 in order for us to submit the EIA Report to Sindh Environmental Protection Agency (SEPA) by March 15, 2016.

6. **Geotechnical Investigations:** As discussed during the above referred meeting, TMTD informed NESPAK that the geotechnical investigation results will be submitted by February 26, 2016.

7. **Coordination between TMTD and Utility Companies:** TMTD informed NESPAK that coordination among the various utility companies tasked with relocation of services for the BRT Orange and Green Line projects is being undertaken by TMTD.

8. **Utility Relocation due to Elevated Section:** NESPAK shall submit the layout plan to TMTD for onward submission to various utility agencies by February 26, 2016.

Sincerely,

for National Engineering Services Pakistan (Pvt.) Limited



**Rehan Zamin**  
Project Manager  
(Roads, Bridges and Highways)

- Cc: - Secretary, Transport & Mass Transit Department, GoS  
- Director General, KMTD, TMTD  
- Mr. Ahmad Halim, Vice President, NESPAK, Karachi



No. KMTTC/TMTD/BRT-OL/2016/130  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT

Dated 09-06-2016

021-99230665

021-99231153

M/s MS Engineering Service (Pvt.) Ltd  
Office No.03, 1<sup>st</sup> Floor, Plot B/35,  
Block-16, Gulshan-e-Iqbal,  
Karachi.

*[Signature]*  
9/6/2016

**WORK ORDER**

Subject: **TENDER FOR THE WORK OF BRTS ORANGE LINE" INFRASTRUCTURE DEVELOPMENT PACKAGE-I: FROM TOWN MUNICIPAL ADMINISTRATION (TMA) ORANGI TOWN TO BACHA KHAN FLYOVER AT BANARAS.**

In continuation of this office Acceptance letter No.KMTTC/TMTD/BRT-OL/2016/128 dated 08-06-2016 for subject mentioned work, the Contract Agreement have been signed with your firm and PMU, BRT-OL, TMTD, GOS, you are therefore directed to make arrangements for starting the work immediately and in this connection you are directed to contact the Engineer M/s. NESPAK (Pvt.) Ltd with following:-

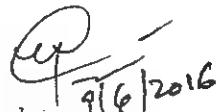
1. Please furnish Schedule of work to be carried out at site along with Procurement Plan of material details so that the progress of work be monitor according to the schedule programme. Please note as per Contract Agreement, work must be completed within Eight (08) calendar months days from the date of start of work in accordance with the Contract Agreement. The consultant M/s. NESPAK (Pvt.) Ltd is the supervising consultant and shall act as the "The Engineer" for the project.
2. The progress report be submitted along with the photographs and support evidence and documents periodically as desired by the Consultant to evaluate the progress of work.

*[Signature]*

3. Before starting the every stage of work proper approval be obtained on the format of approval and as per procedure in the Contract Agreement, terms and condition of Contract and specification of work from the Consultants M/s. NESPAK or representative of the Consultant.

4. To ensure the Public & Worker Safety, Proper Diversion Work, Safety devices and Public information boards be installed at the construction area along with lighting arrangements as per the diversion plan approved by the Consultant M/s. NESPAK (Pvt.) Ltd.

Please start the work at site strictly in accordance with the Terms and Conditions of Contract and complete all the requirements as per condition of the Contract immediately. Please note if any requirement & terms & conditions is violated, action will be initiated against the firm in accordance with the Terms and Conditions of Contract and Rules.

  
9/6/2016  
Muhammad Athar  
Project Director (PMU)  
BRT-Orange Line Project  
T&MTD, GOS

Copy to:

Director General, KMTC, TMTD, GOS.

Project Director (PMU) BRT - Orange Line, T&MTD, GOS

Project Engineer (PMU) BRT - Orange Line, T&MTD, GOS

PS to Secretary, TMTD, GOS.

Principal Manager (Roads, Bridges & Highways), M/s. NESPAK (Consultant).



No. KMTC/TMTD/BRT-OL/2016/  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT

Dated: 11-09-2016

Tele. 021-99230665  
Fax. 021-99231153

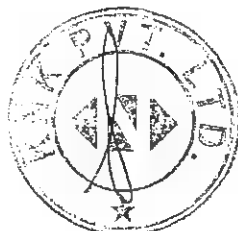
M/s. KNK (Pvt.) Ltd  
11-A/3, Gulberg III,  
Lahore-Pakistan.  
Tel: 042-35759619

**WORK ORDER**

Subject: TENDER FOR THE WORK OF BRTS ORANGE LINE INFRASTRUCTURE DEVELOPMENT PACKAGE-II: FROM BACHA KHAN FLYOVER TO BOARD OFFICE.

In continuation of this office Acceptance letter No.KMTC/TMTD/BRT-OL/2016/212 dated 09-09-2016 for subject mentioned work, the Contract Agreement have been signed with your firm and PMU, BRT-OL, TMTD, GOS, you are therefore directed to make arrangements for starting the work immediately and in this connection you are directed to contact the Engineer M/s. NESPAK (Pvt.) Ltd with following:-

1. Please furnish Schedule of work to be carried out at site along with Procurement Plan of material details so that the progress of work be monitor according to the schedule programme. Please note as per Contract Agreement, work must be completed within Eight (08) calendar months days from the date of start of work in accordance with the Contract Agreement. The consultant M/s. NESPAK (Pvt.) Ltd is the supervising consultant and shall act as the "The Engineer" for the project.
2. The progress report be submitted along with the photographs and support evidence and documents periodically as desired by the Consultant to evaluate the progress of work.

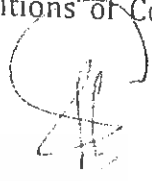


1/2

Before starting the every stage of work proper approval be obtained on the format of approval and as per procedure in the Contract Agreement, terms and condition of Contract and specification of work from the Consultants M/s. NESPAK or representative of the Consultant.

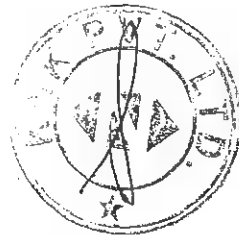
4. To ensure the Public & Worker Safety, Proper Diversion Work, Safety devices and Public information boards be installed at the construction area along with lighting arrangements as per the diversion plan approved by the Consultant M/s. NESPAK (Pvt.) Ltd.

Please start the work at site strictly in accordance with the Terms and Conditions of the Contract and complete all the requirements as per condition of the Contract immediately. Please note if any requirement & terms & conditions is violated, action will be initiated against the firm in accordance with the Terms and Conditions of Contract and Rules.

  
Syed Asadullah Shah  
Director General  
KMTC, T&MTD, GOS

Copy to:

- (i) Deputy Project Director (PMU) BRT - Orange Line, T&MTD, GOS.
- (ii) Project Engineer (PMU) BRT - Orange Line, T&MTD, GOS.
- (iii) PS to Secretary, TMTD, GOS.
- (iv) Principal Manager (Roads, Bridges & Highways), M/s. NESPAK (Consultant).



Mr. Tanvir Khan of M/s. EA Consulting explained the proposal # 02 with the committee, which involved integration of OL BRTS and GL BRTS at Hyderi Station. He mentioned that under this option, Orange Line bus will be taking a left turn from Board Office towards Nagan and will move in mix traffic between Board Office and KDA Flyover and will use Green Line Corridor between KDA Flyover and Nagan. He intimated that Passengers for Numaish will alight at Hyderi and transfer to Green Line BRTS Station. In this option, commuter going to Nagan will be served without shifting of bus and only those who are commuting towards Numaish will require one transfer.

Mr. Ashar Lodi of E&Y-Exponent JV explained the third option for integration i.e. Orange Line taking turn around from KDA Chowrangi. He mentioned that in this proposal Orange Line bus will be taking a left turn from Board Office towards Nagan. He mentioned that passengers for both Numaish & Nagan will alight at kerb side station and transfer to Green Line Station at Board Office by using Pedestrian Bridge. He opined that in this option, there will be no possibility of establishing a closed fare system. Additionally, the Orange Line buses will move in mix traffic and will take a U-Turn beneath KDA Flyover.

COO-SIDCL highlighted that factors like cost involved in physical integration and subsidy to Operator must also be included / considered in any proposal of integration.

Mr. Ashraf Lakho, representative of T&MT department, mentioned that operations of both BRT services are identical, and the forum must focus on providing ease to public. He opined that GoS proposal for priority signaling may be looked into in its entirety.

Mr. Tanvir Khan of EA Consulting intimated the committee that federal government on request of GoS has constructed signal free corridor on Sher Shah Suri road at approximate cost of 2.4 Billion to ease the traffic congestion. The priority signal proposal runs against the spirit of signal free corridor and is not feasible since it will inevitably lead to traffic congestion issues at the Board Office Interchange, therefore option 2 or option 3 may be considered by the committee.

Mr. Mubashir of E&Y-Exponent JV opined that if the committee is considering one option between option 2 and option 3, in that case option-2 is recommended since option-3 will not provide any physical integration.

Dr. Sarosh Hashmat Lodhi mentioned that cost implications needed to be considered, along with other factors like passenger ease and ridership. He mentioned that structural changes at Board Office Interchange will be required for option-1, which may involve capital cost and recurring costs. He proposed that the committee may finalize either option-1 or option-2.

Mr. Adnan Asdar, Brig. Qazi Nasir Mehmood & Manager (ITS), SIDCL endorsed option-2.

CEO-SIDCL opined that any proposal requiring little structural adjustment may be finalized, which under present circumstances seem to be option-2. He opined that option-1 may also be explored in future, if necessitated.

COO-SIDCL opined that option-2 is recommended, since it resolves all concerns of stakeholders and is also non-invasive option. However, if its warranted in future, GoS may opt for option 1 once SIDCL's operation term ends.

Chairman SIDCL mentioned that Sher Shah Suri road has been developed to serve as trunk road or major artery. He said that he prefers option-3, since the same doesn't involve any capital investment or structural changes, however, for resolving concerns of some stakeholders, the option-2 may be finalized.

#### Decision:

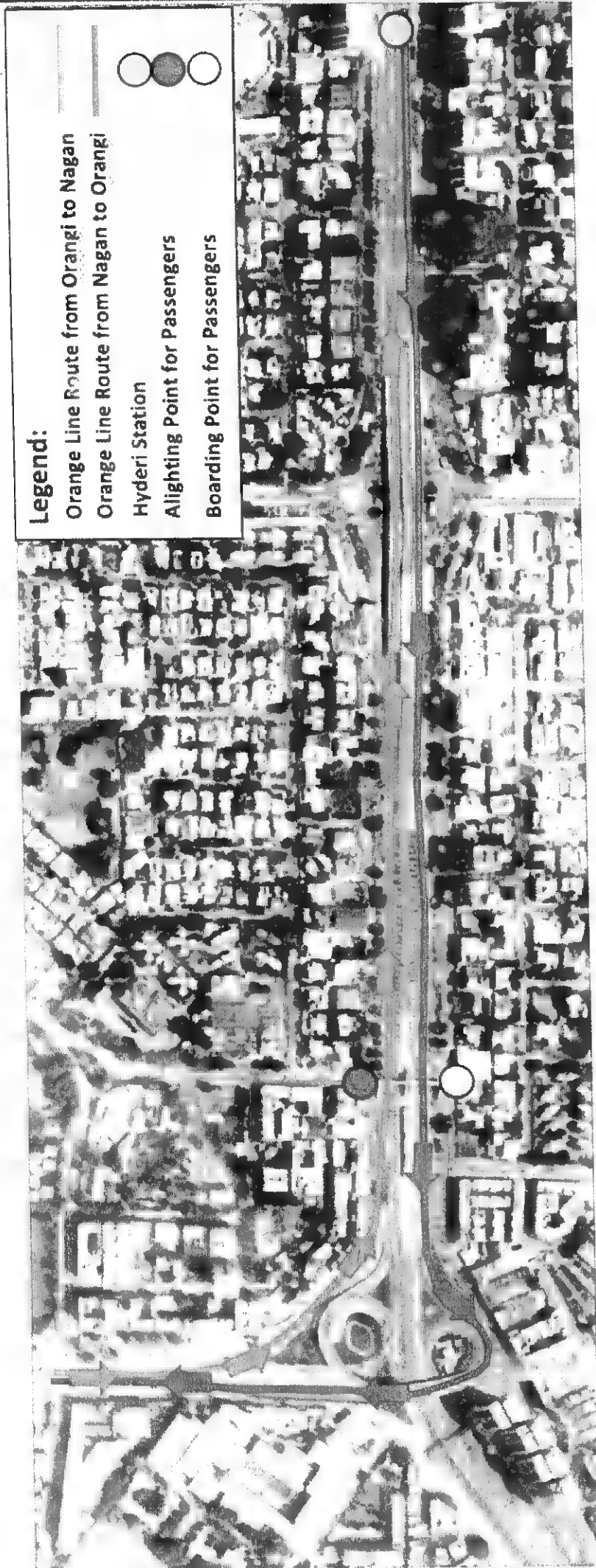
Decision:

Page 4 of 5

✓

As regards the proposed physical integration of Orange Line, the Committee recommended option-2 being the most feasible option in the current circumstances, considering operational, financial, and structural factors. It was further agreed that cost involved in integration will be met by GoS. The committee directed the SIDCL management to submit its recommendation to GoS in response to GoS request for integrating Orange Line with Green Line

Option 2: Orange Line Interchange at Hydri Station and Nagan



- In this options Orange Line bus will be taking a left turn from Board Office towards Nagan.
- Bus will move in mix traffic between Board Office and KDA Flyover and will use Green Line Corridor between KDA Flover and Nagan.
- Passengers for Numaish will alight at Hyderi Bus Stop and transfer to Green Line Station. There will be a negative journey for them.
- However, passengers for Nagan can be served without shifting of bus.





**TRANSPORT AND MASS TRANSIT  
DEPARTMENT  
GOVERNMENT OF SINDH**

→ Must be  
printed  
double sided

**BUS RAPID TRANSIT SYSTEM (BRTS)  
"ORANGE LINE"  
INFRASTRUCTURE DEVELOPMENT  
PLATFORM SCREEN DOORS (PSD)**

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**SPECIFICATIONS, DRAWINGS, AND RATES**

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**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LIMITED**

13th Floor, N.I.C. Building, Abbasi Shaheed Road, Off Shahra-e-Faisal, Karachi-75300

P. O. Box 5772, Karachi, Pakistan

-mail: [nespakkh@khi.wol.net.pk](mailto:nespakkh@khi.wol.net.pk), [Karachi@nespak.com.pk](mailto:Karachi@nespak.com.pk) Website: [www.nespak.com.pk](http://www.nespak.com.pk)

**SECTION – 8002****GENERAL TECHNICAL REQUIREMENTS FOR PLATFORM SCREEN DOORS (PSD)****1.0 GENERAL REQUIREMENTS:**

This section states the general technical conditions and requirements applicable to the design, manufacture, supply, installation, testing and commissioning of equipment and material related to the Platform Screen Doors (PSD) for Orange Line BRT including all associated work as stated in this Contract. These conditions shall be read in conjunction with the General Conditions, Special Conditions, Technical Specifications, Bill of Quantities (BoQ), Drawings, Appendices, other relevant provision of the Contract and in accordance with International Organization for Standardization (ISO) and Telecommunications Industries Association (TIA) recommendations

The General Technical Requirements shall also comply with the relevant electrical specifications and with other relevant provisions of the Contract Documents.

**2.0 SCOPE OF WORK:**

The scope of work includes Detailed Engineering Design, Manufacture, Verification, Supply, Delivery to site, Storage at Site, Installation, Testing & Commissioning (including integrated testing and commissioning), Trial runs, Demonstration of Performance Guarantee of the equipment and System, Submission of Operation & Maintenance Manuals, Operation and Maintenance including consumables for two (02) years, Supply of Spare parts, Operation and maintenance Training of Staff and co-ordination with Designated Contractors for complete platform screen doors system necessary to deliver the requirements of the Contract.

The Bidder / Contractor is advised to visit the site to check the available door opening and pit to ensure that offered equipment will suit to existing conditions and shall comply the requirements of the project. The scope of work will generally cover the manufacture recommendations as applicable, as per site conditions and the Engineers approval.

Contractor shall co-ordinate with Infrastructure contractor of Package-I & II for provision of supply from main electrical system of each station and civil work of PSD.

Contractor shall also co-ordinate with Contractors of ITS for connectivity of network switch for remote monitoring & controlling of PSD and Bus Operator for testing & commissioning of PSD.

Co-ordination with existing services laid and installed in the premises of BRT stations to avoid any damages to existing services. No payment shall be made for repair of any existing services if damaged during installation of PSD work.

Contractor's scope include civil works associated with Platform Screen Door System works and painting the civil works. The Contractor shall require to provide design drawings and calculations for the steel support for the PSD to Consultant for approval. Maintenance of the area during Construction and Implementation stage. Thus work shall carried out as required. The scope also include water proofing where applicable at site.

The cost of all civil works associated with items of PSD Works, such as excavation and backfilling of earth, compaction of the earth, foundation pads, thrust boring, chiseling, making openings, etc. shall deemed to be included in the price quoted against respective items. No separate payment for such works shall be made. Such works will also include repair of any damage to civil works caused by the Contractor during installation.

Providing all the items required for civil works and details / inputs including foundations, inserts, openings and other structural works required for the erection of Equipment, sliding and fixed panels for complete station system and sub-systems. The levels,

measurements and other information concerning the existing site that shall be shown on the Contract drawings are believed to be correct, but the contractor should verify them for himself.

The scope also include electrical works mentioned in the relevant technical specifications. the cost of all electrical works associated with item of PSD Works shall deemed to be included in the price quoted against respective items. No separate payment for such works shall be made.

Coordination with Plumbing, Drainage and Electrical & Mechanical works is also covered in Contractor's scope of work.

The scope of work also includes cabling, Ethernet switch, management terminal server, reader / loop detector, signal, reader etc.

Detailed engineering, equipment sizing and selection shall be based on Sustainable Design and Energy efficiency system.

The Bidder / Contractor shall take the responsibilities of General Integrator for all the sub-systems and equipment within the Scope of Work, and ensure the integration of the whole system including interfaces with other systems.

This specification and description is intended only to set out the minimum requirements. It is expressly understood and agreed by the bidder / Contractor that anything which is usually furnished as a part of such installation as is called for in this tender and which is necessary for its proper completion, execution and function shall be furnished as ■ part of this specification without additional costs and extension of time whether or not shown on the drawings or described in particular hereinafter.

The Bidder / Contractor is free to offer any design of equipment which in his opinion will be equal to or better than the requirement mentioned in this specifications without any additional cost and extension of time, whereas alternative offer is proposed, the bidder / Contractor shall furnish details of such alternatives to enable their merits to be assessed.

### **3.0 APPLICABLE CODES AND STANDARDS:**

The standards and codes applicable to only a portion of the works specified in this section are referred in the relevant clauses of this section. The works shall generally conform to standards & codes (latest editions) listed hereunder:

- EN12650 - 1 - Building Hardware - Powered Pedestrian Doors - Part 1: Product Requirements and Test Methods.
- EN16005 - Power operated pedestrian door sets. Safety in use. Requirements and test methods
- EN12453 - Industrial, commercial and garage doors and gates. Safety in use of power operated doors. Requirements
- EN55022-93 - Emissions / radio disturbance standards for information technology equipment.
- EN60335-2-103:2005 - Drives for gates doors and windows. drives for gates doors and windows.
- EN60335-1:2012 - Household and similar electrical appliances. Safety. General requirements.

- EN61000-4-2-95 - Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test.
- EN61000-4-3-97 - Electromagnetic compatibility (EMC). Testing and measurement techniques. Radiated, radio-frequency, electromagnetic field immunity test.
- Electromagnetic compatibility (EMC) Testing Tests - EN61000-3-2:2014, EN61000-3-3:2013, EN61000-4-2:2010, EN61000-4-3:2007, EN61000-4-4:2013, EN61000-4-4-95; EN61000-4-5:2015, EN61000-4-5-95; EN61000-4-6:2014, EN61000-4-6-96; EN61000-4-8:2011, EN61000-4-8-93; EN61000-4-1:94, EN61000-6-1:2007 & EN61000-4-11:2015.
- EN60068-2-1 - Environmental testing
- EN60068-2-27 shock tests
- MISRA2004 Guidelines for the use of the C language in critical systems
- EN 60529: Protection Rating.
- System integration test - Depending on customer requirement.
- BS7671 - Requirements for Electrical Installations (wiring regulations).
- BS721 1 or BS6724 - Power cables will be Low Smoke Zero Halogen(LSZH)
- NFPA 130 :Fixed Guide way Transit System
- EN 61000 2004/108/CE - Directive for manufacturers.
- 12600:2003 - Glass in building. Pendulum test. Impact test method and classification for flat glass.
- 2006/42/CE - Machinery Directive.
- 2002/95/EC – RoHS. Restriction of the use of certain hazardous substances in electrical and electronic equipment.
- 2006/95/EC - Electrical equipment designed for use within certain voltage limits.
- DIN 50049 - Inspection documents for the delivery of metallic products.
- ASTM A 480 - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
- DIN 17162 - Flat steel products; hot-dip zinc coated strip.
- EN ISO 12100-1:2003, Safety of machinery - Basic concepts, general principles for design Part 1: Basic Terminology, methodology (ISO 12100-1:2003)
- ISO 9001:2015 – Quality Management System.
- ISO 14001:2015 – Environmental Management System.
- ISO 7599:2011 - Anodizing of aluminum and its alloys -- General specifications for anodic oxidation coatings on aluminum.

- BS 6206 - Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings. The glazing shall conform to Class A as stated in Clause 4 of when subjected to the tests described in the standard.
- The Contractor shall conduct the impact tests in accordance with the relevant clauses of BS 6206, but the size of the test sample for all thicknesses shall be taken as the largest pane of glass in the system.
- EN 1461 – Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods.

This list is not restrictive. The contractor shall have to take account of the new standards which could come into effect during the progress of design and installation

Other authoritative codes and standards which ensure equal or higher quality than those referenced may also be acceptable subject to approval of the Engineer.

Any conflict between the requirements of this specification and in the codes, standards and specifications referred to herein shall be brought to the attention of the Engineer for resolution whose decision will be final and binding.

#### 4.0 AMBIENT CONDITIONS:

All material and equipment supplied and installed shall be designed, manufactured and tested to meet the following ambient conditions unless specifically stated otherwise for any material/equipment.

Maximum indoor ambient temperature	:	45	Degree Celsius
Minimum indoor ambient temperature	:	05	Degree Celsius
Maximum outdoor ambient temperature	:	50	Degree Celsius
Minimum outdoor ambient temperature	:	Zero	Degree Celsius
Maximum Relative humidity	:	90	Percent
Maximum Altitude of project	:	100	meters above the mean sea level.
Wind Velocity	:	50 m/s (180 km/hr.)	
Seismic Loading	:	Zone 2 B	

All the offered/supplied electrical equipment, devices and material etc., shall be strictly in line with the project site conditions.

#### 5.0 EXECUTION OF THE WORKS:

The Contractor shall bear full and total system-wide responsibility for all systems and products selected, designed, furnished, and installed under this contract.

The design shall take into account all site and environmental factors.

The works shall be performed by workmen skilled in the particular trades involve and shall include all works necessary to complete the installation in a professional manner so as to present ■ neat and finished appearance.

The Contractor shall supply all accessories and other items essential for the proper performance and completion of the works.

De-mobilization, clearing of all temporary works and facilities after completion of job. Earthing and bonding protection wherever required.

Any related civil work modification and adjustment require for the installation shall be entire responsibility of the Contractor.

All work shall be performed and completed in a thorough workmanlike manner and shall follow the best modern practice in the manufacture of high-grade machinery, notwithstanding any omissions from the Tender Documents. All work shall be performed by mechanics skilled in their various trades. All parts shall be made accurately to Standards, where possible, so as to facilitate replacement and repairs. All bolts, nuts, screws, rivets, threads, pipes, gages and gears shall conform to applicable approved standards.

## **6.0 ORIGIN OF SUPPLY:**

Complete equipment and material, to be supplied under the contract, shall be of imported origin and shall be provided completely by any one of the following PSD manufacturers or approved equivalent;

- GRUPSA (Spain)
- Manusa (Spain)
- ADIS (Australia)
- WESTING HOUSE (Western Europe)
- Gilgen Door System (Western Europe)
- Geze (Germany)
- Oclap (Italy)

All PSD components shall be manufactured/Supplied from the Manufacturer's own manufacturing plants.

For all Original Equipment Manufacturer (OEM) equipment, the Contractor shall clearly identify the brand of the equipment, the country where the equipment has been manufactured, as well as the local agent in Pakistan who is able to provide local maintenance assistance.

Local agent's reference shall include at least (but not limited to)

- Company name,
- Address in Pakistan,
- Contact persons,
- Phone numbers,
- Valid Email,
- Reference of the company in similar fields.
- Authorized distribution certificate from OEM.

Equipment originated and manufactured in Israel and India is not acceptable. The bidder shall clearly mention in his bid the origin of the equipment that he is proposing.

All PSD components shall be manufactured / supplied from the Manufacturer's own manufacturing plant and shall be quoted only from Employer's prequalified Constructors / Authorized agent of manufacturer in Pakistan.

To guarantee a high quality standard in the field of designing, fabricating, installing, testing, commissioning, operating and maintaining the said equipment, only manufacturers with a proven record having successfully completed similar projects with platform screen doors for at least three (03) years experience will be considered in the Bid evaluation. To verify the manufacturer's experience, a reference list with completed projects should, therefore, accompany the Bidding documents.

## **7.0 QUALITY ASSURANCE:**

The Contractor shall submit with this Bid a written assurance that the materials and workmanship of the equipment installed will be according to recognized international standards and will conform to all contractual requirements of this specification.

All materials and equipment shall be new and of best quality. Standard components of suppliers regularly engaged in their manufacture shall be offered. All systems and components shall have been thoroughly tested and proven in actual use.

Manufacturers quality control shall be in accordance with the ISO 9000 - series (or DIN equivalent) recommendations. Manufacturers whose quality control has been certified according to ISO 9000 - series will only be acceptable. Certified copy shall be attached to bid. Hardware and software design, quality assurance in the production process, as well as documentation shall be in line with ISO 9000-series.

#### **8.0 STANDARD PRODUCTS:**

Materials furnished under this specifications shall be standard product of manufacturers regularly engaged in the production of such equipment and shall be the manufacturers latest standard design, technology and latest models. Contractor shall submit end of line (EOL) / end of sales (EOS) of each proposed product with its material submittal for Engineer's review and approval. Outdated products and products near to end of line (EOL) / end of sales (EOS) shall not be considered.

#### **9.0 EQUIPMENT LIST:**

The Contractor shall fill-in and sign attached Appendix V to XI with Bid.

Approval of material will be based on manufacturer's published data submitted. The approval of the materials and equipment will be tentative subject to submission of complete schematic diagram and shop drawing layouts indicating compliance with the Contract Documents.

#### **10.0 IP DEGREE OF PROTECTION:**

The equipment shall have IP degree of protection as follows, unless mentioned otherwise:

- IP 42 for indoor areas
- IP 54 for indoor damp areas
- IP 65 for outdoor areas

If properly rated equipment is not available, the Contractor shall provide field enclosures to attain the required IP degree of protection. If necessary cooling/exhaust fans and / or anti condensate heaters shall also be provided. No separate payment shall be made to attain the required IP degree of protection.

#### **11.0 GUARANTEE, TOLERANCES AND REJECTION:**

The Contractor shall furnish a Certificate of Compliance for each major equipment jointly signed by the Contractor and the manufacturer of the equipment that the equipment conforms to the standards and all other requirements laid down in Contract Specifications and that both the Contractor and the manufacturer assume joint responsibility in respect of performance of the equipment.

During and/or after the installation of equipment, manufacturers representative for each equipment shall visit the site and shall verify that the equipment has been installed as per manufacturer's instructions and the Certificate of Compliance, jointly signed by the Contractor and the manufacturer shall also cover any amendments/modifications made in the installation by the Contractor with due approval of the manufacturer. All costs in this connection shall be borne by the Contractor.

If an item of equipment/material has to be rejected because of major deficiencies which are not remediable, then such plant or item shall remain available to the Employer free of charge until such time as ■ replacement is ready for installation. All costs for such rectification shall be the responsibility of Contractor. Any work which does not impair serviceability and integrity



of equipment/material as a whole shall not be deemed as violating the guarantee obligation of Contractor, provided that the Contractor remedies that within 4 weeks.

The Contractor shall guarantee to complete all work called for, so that equipment and material supplied by him are ready for connection and operation within the given period.

The decision regarding the acceptability or otherwise of the equipment and material offered shall be made by the Employer / Engineer whose decision shall be final.

## **12.0 LANGUAGE:**

The language for general correspondence, technical information and data, instruction manuals, literature, pamphlets, drawings, standards and test data shall be exclusively in English. All markings on equipment, dials, name plates and other items shall also be legible in English and also in Urdu where specified. Shipping marks, addresses and instruction on individual packages shall also be printed in capital letters in English only.

The Contractor shall be responsible for replacing at his own cost any item lost or misplaced due to inadequate labeling or marking in any language other than English.

## **13.0 NAME PLATE ■ LABELING:**

All equipment shall be provided with stainless steel name plates which shall be mounted in a visible position. The entries on the name plate shall be indelibly marked in English by engraving and shall include the data in accordance with relevant IEC and other relevant standard applicable to each equipment. In addition, any specified requirement stated in these specifications shall also be complied.

The Contractor shall also supply all labels, instruction and warning plates necessary for the identification and safe operation of the plant and all instructions shall be in English and where specified in Urdu languages. All labels, nameplates, instructions and warning plates shall be securely fixed to items of plant and equipment with stainless steel rivets, plated self-tapping screws or by other approved means. The use of adhesive will not be permitted.

All equipment, cables and wires shall be numbered in accordance with the standardization procedures of EIA/TIA 606.

All equipment, cables and wires shall be numbered in accordance with the standardization procedures. The system describe here is intended only as a guideline and bidders shall be solely responsible to ensure that proper coordination with other sections and disciplines takes place.

## **14.0 STATEMENT OF COMPLIANCE:**

The Contractor shall submit para wise compliance statement with the items of these specifications duly verified and signed by PSD manufacturer and the Contractor.

## **15.0 BID DRAWINGS AND DATA:**

The Contractor shall supply with his bid, four sets of the following information, along with the information specified for each equipment in these specifications.

- a. Fully dimensioned and detailed drawings of the PSD equipment complete with all information necessary for the evaluation of design by the Engineer. These drawings shall be based on the technical requirements and shall specifically include, but not be limited to the following:
  - i. General Arrangement plan, elevations and sections, complete with all dimensions.

- ii. Technical literature and datasheets pertaining to above drawings and equipment furnished.
- b. All schematic drawings, layout drawings, technical data, literature and information to facilitate proper evaluation of the equipment and material.
- c. Lists of supplies made by Bidder / Contractor and manufacturer of equipment to be furnished under this Contract. The lists shall indicate models, type, quantities, and years of supply and names of the purchasers.

#### **16.0 DRAWINGS AND TECHNICAL DATA AFTER AWARD OF WORK:**

The contractor shall submit technical data sheets and drawings to fully elaborate offered equipment.

##### **A. Technical Data Sheets/Technical Submittals**

The Contractor shall submit four copies of detailed technical data and schedules for review and approval of the Engineer and obtain approval. In general, these technical data/submittals shall comprise minimum the following which shall be submitted within three (03) week from award of work.

- Technical data sheets as per specifications;
- Catalogue/Brochure;
- Manufacturer Drawings;
- Structure Drawings from manufacturers;
- Installation Drawings from manufacturers;
- Warranty statement from manufacturers.

##### **B. Design Drawings/Shop Drawings**

The Contractor shall submit Design Drawings/Shop Drawings within two (02) weeks from acceptance of Bid to the Engineer for approval.

The drawings must show in reasonable detail installation and design features such as:

- i) Final arrangement of equipment keeping in view the dimensions provided in architectural drawings for civil construction of the Equipment.
- ii) Maximum dynamic and static loads imposed on bridge structure.
- iii) Dimensions and locations of all services, openings in floors and walls, location of embedded parts and location of electrical connection.
- iv) The contractor shall review the architectural & civil drawings related to the equipment and identify any shortcomings / rectifications essentially required for equipment installation within above stipulated time period.
- v) The contractor shall provide the detail design drawings and design calculations of related steel support structure for PSD.
- vi) Conduiting and wiring layouts and control logic / schematic diagrams.
- vii) All other relevant information required by the Engineer.

Preparation of final detailed Construction drawings and layouts by the Contractor based on the supplied tender drawings to achieve the desired performance characteristics, submit the same to Engineer and obtain Approval, Equipment and Installation shall comply with all relevant Codes, Standards and Regulations specified in the document.

Approval given by the Engineer is to be understood as an approval to proceed with the works. The approval does not in any way release the Contractor from his contractual obligation to supply, install and maintain the equipment supplied by him as laid down in the specifications.

### **C. As-Built Drawings**

The contractor shall furnish four copies and As-built drawings for each PSD of all stations separately. Such drawings, diagrams and schedules shall show an adequate record of the work "as installed" and shall be submitted to the Engineer for approval before the issue / taking over certificate.

The drawings shall include particulars of all items of equipment, including wiring diagrams, etc. As-installed drawings shall be submitted to the Engineer at least thirty (30) days before issue / taking over certificate.

The size of the drawings shall be minimum A1 size. Every item and dimensions in drawings must be legible.

As-built drawings shall include but not limited to the following:

- Power layout of PSD & communication system along with its associated systems.
- Earthing layout of PSD & communication system along with its associated systems.
- Single line diagram / control wiring diagram of distribution board / control panel.
- Conduiting layout comprising of circuit wiring route, pipes and junction boxes details
- Schematic diagram of platform screen doors (PSD) and communication system.
- Layout diagrams with wiring and conduiting of platform screen doors (PSD) and communication system

### **D. Installation, Operation and Maintenance Manuals**

Four (04) sets of installation manual for the equipment shall be supplied by the Contractor prior to commencement of installation of equipment.

At least thirty (30) days prior to the scheduled date of practical completion, the contractor shall supply ■ complete set of operating and maintenance manuals to the Engineer for approval. Once approved, the Contractor shall proceed to prepare and hand to the Engineer four sets of the approved operating and maintenance manuals.

The Contractor shall identify each manual's contents on the cover. The manuals shall include the names, addresses, and telephone numbers of each sub-contractor installing equipment and systems, and of the nearest service representative for each item of equipment and each system. The manuals shall have a table of contents and tab sheets. The contractor shall update all manuals to include modifications made during installations check out, and acceptance. Manuals provided shall include:

- Functional Design Manual
- Hardware Manual
- Operator's Manual
- Software Manual
- Maintenance Manual

- a) **Functional Design Manuals:** The Functional Design Manuals shall identify the operational requirements for the PSD system and explain the theory of operation, and specific functions.

Hardware and software functions, interfaces and requirements shall be provided for all system operating models.

- b) **Hardware Manuals:** The Hardware Manuals shall describe all equipment provided, including:

- general description and specifications
- installation and check-out procedures
- electrical schematics and layout drawings
- alignment and calibration procedures
- manufacturers repairs parts list indicating source of supply
- interface definition
- signal identification and timing diagrams

- c) **Software Manual:** The Software Manual shall describe programming and testing, starting with a system overview and proceeding to a detailed description of each software module. The manual shall be oriented to programmers and shall describe all information necessary to enable proper integration, loading, testing and program execution.

- d) **Operator's Manual:** The Operator's Manual shall provide all procedures and instructions for operation of the system, including:

- use of the systems, command and application details
- alarm presentation
- alarm dictionary
- recovery and re-start procedures
- command directory
- preventive maintenance schedule
- operator's consoles
- emergency directions
- safety control

- e) **Maintenance Manual:** The Maintenance Manual shall provide description of maintenance for all equipment including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective equipment.

Contractor shall provide list of spare parts for each item of equipment as recommended by the manufacturer for at least five (05) years operation. Contractor shall also provide list of essential tools recommended by the manufacturer for operation and maintenance.

All above submission shall be signed and stamped by the Contractor prior to submission and all submission shall be in English. The approval by the Engineer of the above submission shall not be held to relieve the Contractor of any part of his responsibility to meet all of the requirements of this Contract.

## **17.0 EQUIPMENT HANDLING AND STORAGE:**

The Contractor shall prepare all articles and materials for shipment in such a manner as to protect them from damage in transit or loss from repeated handlings and withstand extremes of climate during transport and storage at site. Packing shall be non-returnable.

The Contractor shall carry out port clearance, arrange inland transportation and deliver at site the lift machinery/equipment in their original packages and bundles bearing identification tags. A dry and protected area, close to work site, will be assigned to the Contractor for storage of

his materials and tools. The Contractor shall store the equipment at his own cost and arrange guards to ensure safety of equipment.

The Contractor shall store and transport the equipment in such conditions that it cannot be damaged, i.e., in a dry warehouse. It will be the Contractor's entire responsibility to ensure that all necessary precautions are taken during transportation to avoid damage to any of the equipment. The Contractor shall replace any damaged equipment/materials at his own cost. As particular concerns; fragile components, these shall be stored on shelves in their original packing, fitted with identification labels to avoid unnecessary manipulation or handling.

The Contractor shall handle, store and fix each commodity in accordance with the manufacturer's recommendations.

The Contractor must arrange with the supplier of mechanical equipment, well in advance, that there is sufficient clear and load bearing passage at site to be used for shipping the equipment to the installation place. The Contractor shall also liaise with the equipment supplier with regard to adequate openings and lifting points.

The contractor shall provide 24 hours security and safety before and after installation for the stipulated time mentioned in specifications.

## **18.0 INSPECTION AND CONTROL:**

### **A. General**

The Contractor shall ensure that the manufacturer continuously conducts his own thorough inspections of all equipment during manufacturing, assembling and installation.

The Engineer shall have the power at any time to inspect, examine and test any part of the works, or any materials intended to be used in the works.

### **B. Factory Tests**

Pre shipment / Factory tests are to be carried out in the presence of both the Employer and the Engineer. All type and routine tests on Platform Screen Doors and all other equipment shall be performed at the manufacturer's works in the presence of the Engineer and the Employer or their representative.

The Contractor shall submit the test procedure to the Engineer/Employer for approval at least 4 (four) weeks before carrying out the tests. Factory test procedures shall be drawn in accordance with relevant code/standards, standards practices and manufacturers recommendation.

The Contractor shall inform the Engineer/Employer about the date and time of test of each equipment at least two weeks in advance to allow time to the Engineer and the Employer for preparation and travelling. This shall, however, be done after the Contractor has got the test procedures duly approved by the Engineer.

The Contractor shall make necessary arrangements and provide all the facilities required for the representatives of Employer / Engineer for conducting such inspection, at the Contractor's cost. The cost of travel including overseas travel, arranging of Visas, boarding and lodging for at least two person's visit (including one representative each from the Employer and the Consultant/Engineer) shall be the responsibility of the Contractor.

In addition, the Contractor shall provide daily allowance (US\$ 200 / day) for out of pocket expenses to each of Employer's and Engineer's representatives nominated for inspection scheduled in ■ foreign country. The number of days shall be actual days spent in travel calculated from the dates of travel from and to hometown of the concerned representative. The daily allowance in cash (US\$) shall be provided before start of travel from hometown. Tests and participants for each test are to be mutually agreed upon.

The witnessing of test by the Engineer and the Employer shall not absolve the Contractor from his responsibility for the proper functioning of the equipment, and for furnishing the guarantees referred to in **clause 23.0**. All test results shall be supplied in quadruplicate. All observations agreed on and discrepancies noted during the inspection are to be corrected by the bidder prior to shipment of the equipment. Only tested equipment will be released for shipment. All test results shall be supplied in quadruplicate.

All expenses for carrying out the tests and witness by the Engineer shall be borne by the Contractor and deemed to have been included in the BOQ item of respective equipment / material.

### **C. Inspection at Site Works**

All equipment/materials supplied by the Contractor shall be inspected by the Engineer after delivery of the same at site to assess any damage or short of quantities and any other requirements of the specifications. The Engineer will issue an inspection certificate if the supplied items of equipment and material are found to be satisfactory.

The Engineer shall inspect the works in progress as and when considered necessary by the Engineer and the Contractor shall provide full access and assistance to the Engineer for carrying out inspection to verify the conformity of works as shown on Drawings and as specified. Such inspection if made shall not relieve the Contractor from any obligations under the Contract.

## **19.0 INSTALLATION:**

The Contractor shall install PSD system components and equipment in strict accordance with manufacturer's recommendation and provide all necessary interconnections, services and adjustments required for a complete functional system. The Contractor shall also provide grounding as necessary.

All penetrations shall be sealed to preclude the entry of water using a silicone material.

## **20.0 TESTING AND COMMISSIONING:**

The Contractor shall provide field-testing of the platform screen doors system and on-site operational acceptance test of the complete operational systems in the presence of the Engineer.

Upon completion of the installation, the Contractor shall perform field tests on all equipment, cables, materials and systems. All tests shall be conducted in the presence of the Engineer or his representative for the purpose of demonstrating equipment or system compliance with Specifications. The Contractor shall submit for Engineer's review and approval complete details of tests to be performed describing the procedure, test observations and expected results one week prior to testing and commissioning.

The Contractor shall provide test plans that define all the tests required to ensure that the systems meet the technical, operational and performance specifications. The test plans shall identify the capabilities and functions to be tested, including the values and situations that will comprise the test.

The Contractor shall develop test procedures from the test plan and design documents. The procedure shall consist of detailed instructions for test set up, execution, and evaluation of test results. The test report shall document the results of the tests.

The Contractor shall furnish all tools, instruments, test equipment, materials, etc., and all qualified personnel required for the testing, setting and adjustment of all platform screen doors and material including putting the same into operation. The accuracy of the Contractor's instruments shall be demonstrated if required.

All tests shall be made with proper regard for the protection of the personnel and equipment and the Contractor shall be responsible for adequate protection of all personnel and equipment during such tests. The cost of any damages or rectification work due to any accident during the tests shall be the sole responsibility of Contractor.

The Contractor shall record all test values of the tests made by him on all equipment. Four (4) copies of all test data and results certified by the Engineer shall be given to the Engineer for record purposes. These shall also include details of testing method, testing equipment, diagrams, etc.

The witnessing of any tests by the Engineer does not relieve the Contractor of his guarantees for materials, equipment and workmanship, or as any other obligations of Contract.

On the completion of the Work substantially in accordance with the Contract, the Contractor shall give the Engineer notice in writing thereof and before making the "Testing and Commissioning" shall give the Engineer and the local authority seven (07) days notice in writing of the date on which he will make the said tests of the work in accordance with relevant codes and in the manner prescribed by the Specification.

Unless otherwise agreed, the Contractor shall commence such tests upon the date and shall carry out the same, in the presence of the Engineer or his authorized representative, whose name shall previously have been communicated in writing to the Contractor and the local authority.

If any portion of the works fails under the tests to fulfill the Contract conditions, the Contractor shall inform the Engineer thereof in writing, and tests of the faulty portions shall, if required by the Engineer be repeated within a reasonable time upon the same terms and conditions.

If the "Testing and Commissioning" is not successfully made by the Contractor within one week after the date fixed by the Contractor for the completion for operational use or for the testing of the works, the Engineer may in writing call upon the Contractor under seven (07) days notice to make such tests, and on the expiry of such notice such tests shall forthwith be made by some other agency appointed by the Engineer at the expense of Contractor.

The Contractor shall make for payment of all or any fees charged by the local authorities for the above.

## **21.0 TEST CERTIFICATES AND REPORTS:**

The Contractor shall provide copies of all test certificates/reports including the following:

- (i) Test Certificates of materials
- (ii) Factory test reports
- (iii) Pre-shipment test report
- (iv) Report of testing & commissioning of equipment

## **22.0 TRAINING:**

On completion of all works, but prior to final taking over, the Contractor shall arrange for free training and instruction to be provided to the client's maintenance staff and operators. This training shall cover all aspects of the operation and maintenance of the equipment and shall ensure that the trainee is provided with at least the necessary fundamentals required for the safe and efficient operation of the equipment. The instructor(s) must be competent and experienced personnel, well acquainted with the task of lecturing. Instructor must have certified training from manufacturer of PSD. The schedule of offered training highlighting the details of syllabus indicating number of hours for training and field instruction subject to be taught and no. of Clients staff strength to be trained shall be enclosed with Bid so as to allow for an evaluation by the Engineer.

**23.0 MANUFACTURER WARRANTY:**

The Contractor shall submit two copies of written warranty from the manufacturer under his cover warranty that the material and workmanship of the equipment installed is according to recognized international standards and conform to all contractual requirements of this specification that he will make good without extra cost any defects not due to ordinary wear and tear or improper use, which may develop within one year from date of the equipment being handed over to the Employer.

During the last month of the guarantee period, the Contractor shall demonstrate to the Engineer that all equipment and accessories are operating to the required specifications.

The manufacturer warranty period shall be one (1) year after final commissioning.

In case if equipment remains out of order for more than ten (10) days or more, warranty/maintenance period will be extended accordingly.

**24.0 OPERATION AND MAINTENANCE:****A. Operation ■ Maintenance**

The Contractor shall include the routine daily Operation, maintenance and guarantees of the whole of the Contract Works. During this term, the Contractor shall remedy and/or replace all defective parts or items and correct any omissions certified by the Engineer.

The Contractor will also be held liable for any costs of dismantling or re-election which may have to be undertaken in order to replace defective parts.

Continuous service of operation shall be provided on a routine daily basis for 18 hours/day, 7 days/ week, and 365 days/year for all stations.

Services shall be performed by skilled personnel under the supervision of experienced supervisors.

The operation & maintenance shall include continuous operation provision of consumables by the Contractor, inspection of all equipment, lubrication of all bearings, the supply of all necessary oil and grease, cotton waste, running adjustments and keeping the installation and equipment in a clean condition unless otherwise specified/required by the Engineer.

All equipment/system shall have the provision of tele maintenance/trouble shooting by the manufacturer of the equipment from their factory / service facility.

**B. Register of Operation and Maintenance**

The Contractor shall provide a register of operation and maintenance for the installation. Where such requirements are specially required by any regulation of authorities having relevant jurisdiction over this contract work this shall be complied with strictly.

The Contractor shall also provide and maintain a record of all services, operation, maintenance and repair work carried out in detail. Such record shall be prepared in duplicate and should be in the form of a maintenance/repair sheet with one copy to be retained by the Engineer upon the execution of such services.

All registers and records shall be kept by competent persons in the employment of the Contractor during the period for which he is responsible for maintaining the installation.



### **C. Operation and Maintenance Staff**

The Contractor shall provide complete staff to operate the system continuously for 24 hours a day. Operating supervisor for complete system shall be a Graduate engineer, registered with Pakistan Engineering Council having at least three (03) years experience in operation and maintenance of similar works. The remaining staff list shall be as approved by the Engineer. The Contractor shall also arrange to provide proper training to employer staff to operate the system to entire satisfaction of the Employer. All cost incidental to provide operating staff including staff salaries shall be deemed to be included in relevant item of Schedule of Prices. No separate payment shall be made to the Contractor for fulfillment of his obligations under this Clause.

### **25.0 TOOLS & INSTRUMENTS FOR TESTING, SERVICING, OPERATION AND MAINTENANCE:**

The Contractor shall supply and deliver to site a complete set of essential tools, test equipment, and other instruments necessary for proper testing, servicing, operation and maintenance of the equipments by OEM. Tools shall include special tools and instruments, which are necessary for operation, maintenance repair and overhauls of the equipment. The Contractor will not use these tools for erection purpose, etc. Contractor shall indicate the manufacturer, model, quantity of each item in Appendix-XI attached with BoQ of each item of platform screen doors.

#### **A. Spare Parts**

The Bidder shall provide with the Bid a recommended spares and components which shall be required to maintain each equipment as mentioned in Appendix-IV.

The Bidder shall also confirm in Bid his ability to provide a full range of spare parts and major components for the offered equipment. The Bidder shall provide a guarantee period of at least fifteen (15) years for the serviceability of equipment and supply of spare parts and indicate the same in his Bid.

### **26.0 AFTER – SALE SERVICE:**

After the expiry of the warranty period, the Contractor shall be able to provide maintenance support and any spare part at least during the 15 years following the substantial acceptance of the related equipment/system.

### **27.0 PAINTING ■ FINISHES:**

All equipment including exposed steel work, ferrous metal parts of motor, gear and controllers, structures, Steps, truss, truck and other materials shall be properly prepared, primed, undercoated and then painted in accordance with recognized international standards. The type and shade of paints particularly the finishes shall be subject to the approval of the Engineer.

All equipment, machinery, gears, controls, exposed and unexposed steel work shall be thoroughly cleaned, freed from oil, grease and other foreign substances detrimental to good finishing.

Before application of primer, all surfaces shall be made clean and free from rust and grit by means of blast cleaning. Automatic blasting may be used with most of the common abrasives such as shot, chilled iron, cut wire, or proprietary grit abrasives. The surfaces shall be immediately painted after blast cleaning. In the event the surface become otherwise contaminated in the interval between cleaning and painting, re-cleaning shall be done before painting.

Apply approved primer, undercoats and finishing coats on a properly prepared surface in accordance with the paint manufacturer's recommendation and in accordance with recognized international standards.

The type and shade of paints, particularly of the finishing coat shall be subject to the Employer's/Engineer's approval.

Enamel shall also be applied according to the manufacturer's recommendation. Stainless steel finish shall be No.4 finish or equivalent, unless specified otherwise in the specification. If field touch-ups of abraded and damaged surfaces become necessary, the same type of paint used in the factory shall be employed.

Surfaces of stainless steel, aluminum, bronze and machined surfaces adjacent to metal work being cleaned or painted shall be protected by effective masking or other suitable means, during the cleaning and painting operations.

All paints shall be in a thoroughly mixed condition at the time of application. All work shall be done in a workmanlike manner, leaving the finished surface free from drips, ridges, waves, laps and brush marks. All paints shall be applied under dry and dust free conditions. Unless approved by the Engineer paint shall not be applied when the temperature of the metal or the surrounding air is below 45 °F. Surfaces shall be free from moisture at the time of painting.

The first coat of paint shall be applied immediately after cleaning. When paint is applied by spraying, suitable measures shall be taken to prevent segregation of the paint in the container during painting operation. Effective means shall be adopted for removing all free oil and moisture from the air supply lines of the spraying equipment.

Each coat of the paint shall be allowed to dry or harden thoroughly before the succeeding coat is applied. Surfaces to be painted that will be inaccessible after assembly shall be completely painted prior to assembly operation.

## **28.0 STRUCTURAL METAL WORK:**

The fabrication of the Structural Steel shall be performed strictly in accordance with these specifications and shall otherwise conform to the latest revision of the American Institute of Steel Construction "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings". Surface finish shall conform to ANSI Standard B 64.1 Surface Texture. The Manufacturer shall be responsible for all errors of fabrication and for the correct fitting of the elements of the equipment. Structural Steel shall be thoroughly straightened by methods that will not result in injury. Sharp kinks or bends in members to be straightened will be cause for rejection. Completed work shall be free from kinks, bends or winds. Shearing shall be accurately done, with neat finish. Corners shall be square and true unless otherwise shown on the Drawings. Re-entrant cuts shall be made in a workmanlike manner and, where they cannot be made by shearing, a re-entrant punch may be used. Re-entrant cuts shall be filleted unless otherwise approved by the Engineer. Bends, except for minor details, shall be made with approved dies or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal, and it shall be allowed to cool in such a manner as not to destroy the original properties of the metal. Steel with welds will not be accepted except where welding is definitely specified, called for on the Drawings, or otherwise approved. Low-carbon structural steel may be cut by machine-guided or hand-guided torches instead of shears or by saws. Flame cutting of material other than low-carbon steel shall be subject to approval and where proposed shall be definitely indicated on detailed drawings submitted to the Engineer. Where a torch is mechanically guided, no chipping or grinding will be required except where necessary to re-move the slag and sharp edges. Flame gouging will be permitted in preparation of welding where a torch is hand-guided. All cuts shall be chipped, ground or machined to sound levels.

## **29.0 PAYMENT:**

No separate payment shall be made for the works, materials, services, tools and plants etc. stated in this section. The rates quoted shall be deemed to be included in the price quoted against respective items for all works, materials, services, tools and plants etc. required for completion of each item of work including surveys, investigations, associated civil works, co-ordinations, etc.

\*\*\* End of Section 8002 \*\*\*

## SECTION 8376

### PLATFORM SCREEN DOORS (PSD)

#### 1.0 SCOPE OF WORK:

The scope under this section consists of detail engineering design, supply, installation, configuration, programming, integration, testing, commissioning and training of all materials and services of the complete Platform Screen Doors (PSD) as specified herein, shown in the Drawings and stated in the Bill of Quantities.

The Platform Screen Doors (PSD) with accessories shall also comply with General Technical Requirements for Platform Screen Doors (PSD) Section – 8002, relevant Electrical specifications and with other relevant provisions of the Contract

#### 2.0 GENERAL:

The platform screen door system shall have provision to allow to identify different bus types of Orange Line. The door opening shall be performed at the moment the bus is properly positioned and the door closing shall be done at the moment the bus starts moving.

PSD System shall have provision for interfacing PSD to Passenger Information Display System provided by ITS. PSD shall include all safety signs.

Central Station Controller (CSC) shall not allow bus to stop at second door if there is no bus on the first door.

PSD shall operate on 18 Hour/day, 7 days/ week, 365 days/ year.

The complete PSD set including all equipment / material shall be manufactured and supply from single manufacturer.

#### 3.0 MATERIAL

Thirty two (32) nos. PSD as shown on drawing, designed for high commuter traffic of required height and width as shown on architectural drawings having tempered laminated glazed screen doors of 10 mm, clearance and suitable for outdoor installations. The driving unit shall be installed at the top of the door.

The PSD shall include all following equipment/ material necessary to complete the system but not limited to;

- i) The PSD equipment must include double sliding doors / panels, fixed doors / panels, heavy duty VVVT type motors, driving unit, distribution board / control panel, door control units (DCU), automatic controls, manual control, locking units, emergency push button, key, audio visual indicators, built-in surge protectors, weather proof header box, guide rails, steel support, power supply, etc.
- ii) Bus docking system / positioning system for PSD including positioning sensors, microprocessor / communication board for set of doors, safety devices, control system, traffic lights, connectors, communication cables, manual door controls, etc.
- iii) Local and remote monitoring & control system for each station including monitoring & control software for local PC / platform screen local panel (PSL) with human machine interface (HMI), central station controller (CSC), key operated switch, Ethernet switches, gateways/converters, passive equipments, interface to ITS network (connection to Command & Control Centre of BRTS for monitoring and controlling of all PSD doors).

- iv) Remote monitoring & control system for Command & Control Centre (CCC) of BRT including monitoring & control software for remote server, Ethernet switches, gateways/converters, passive equipment, rack / cabinet, interface to ITS network.
- v) Cables and conduits.
- vi) Any other required essential component / equipment and interconnecting cables.

### 3.1 System Control, Local Control and Door Controls

The PSD system shall have three (03) operation modes:

- System Control (Normal operation model).
- Platform Control (Non-normal operation model)
- Manual Operation Control (Emergency operation mode)

**System Control** is ■ control which shall detect the bus position and signal the door to operate automatically. Furthermore, doors should not open by any other object except the specified BRT buses parked at dedicated position.

**Platform Control** is a local control panel which shall be installed in each station for the station staff to locally control the PSDs system when the System Control cannot work.

**Manual Operation Control** shall have emergency key operated switch for unlocking the whole set of screen doors at the station. Emergency push button shall be used for individually opening of each door.

Each sliding panel shall be allowed for automatic operation with all necessary sensors, drives and electronic controllers.

Station Facilities shall include PSD Central Station Controller (CSC), Door Control Units (DCUs), a Platform Screen Local Panel (PSL), Infrared / ultrasonic / photoelectric sensors and other facilities as required for satisfactory operation of the complete system.

**Platform Screen Local Panel (PSL) with HMI** - Generally one microprocessor based LCD type. PSLs shall be provided on station. In all circumstances the PSL shall be visible to the Station Operator. The PSL shall provide limited local control speed regulators and monitoring facilities, and an interlock override function.

**Door Control Units (DCU)** - These units shall be located above each PSD door set (PSD Header Box) and shall be dedicated to one door set only. The unit shall act as the local facility to:

- Receive and manipulate incoming control signals and provide local control to the door set actuation and drive equipment.
- Receive and manipulate incoming monitoring signals from door set local monitoring and sensor equipment.

For door operation, the infrared / laser / ultrasonic / photoelectric / loop detector sensor and all necessary parts/equipment on bus side and door sides are part of scope of supply.

All above controls, interfacing equipment, cabling, housings, conduits etc. to be provided by PSD Manufacturer along with PSD as a whole package.

PSD shall have indication traffic light (Green – Red), luminous signal, audio signal and voice synthesizer at the time of opening and closing of PSD.

Bus location sensors shall provide signal to the doors and traffic lights.

Drive and Control shall be designed for ten (10) million operation cycles.

The PSD shall have the obstacle detection function.

Bus detection system independent of colour / background shall have relevant sensors of adjustable range, compact body, long range adjustable to a maximum distance of 2 meter. It shall incorporate the ability to place two sensors very close or facing each other without interfering with each other. Adjustable long range reflectivity.

The system shall allow incorporation of monitoring, control, tracking and supervision that can be done locally or remotely in real time.

System shall be modular and scalable with the possibility of incorporating new devices.

### **3.2 Local and Remote Monitoring & Control System:**

The Contractor shall provide hardware and software for remote monitoring of all PSDs from Command and Control Centre (CCC) as well as for local monitoring and control from within each station. Complete hardware for each station including, but not limited to, Platform Local Control Panel (PSL) with HMI, Central Station Controller (CSC), cabinet for housing RMCS equipment, UPS unit, control and communication cables etc. shall be supplied and installed by the Contractor as per Project's requirements and approved drawings.

The PSLs, which is a part of the PSD Operators, shall be integrated with CSC so that all the required parameters of PSDs shall be made available for local monitoring and control. The CSC in each station shall receive and store local data of PSDs. The CSC shall be capable to store local data for at least fifteen (15) days so that in case of communication system/link failure between station and CCC, the data can be transferred to CCC later on. The local HMI at each station shall display the desired data for operator's information and necessary action.

The PSLs with HMI, CSC etc. shall be provided power supply through UPS so that it remains operational for 30 minutes during power failures

For CCC, latest computer / server along with LED screen shall be provided to monitor live status/data of all PSDs. The system shall be equipped with latest/compatible Windows operating system. A comprehensive software application shall be provided by the Principal manufacturer for live monitoring and reporting purposes. The system shall be capable of data archival for at least last six (06) months and all the interfaces, reports and information would be made available as per Client requirements.

Typically, the software application shall handle all reports involving downtime of PSDs along with error indication. In case of Door stoppage, the software application shall promptly indicate the same through an appropriate pop-up window so that the operator in CCC can take necessary remedial action. The software features, menus, interfaces would be submitted to Client's approval prior to installation in Command and Control Centre.

The cabling, conduit laying, accessories etc. shall be done by the Contractor to render the system fully functional. The communication cabling for complete equipment of PSD is in Contractor's scope. However, the deployment of fiber optic cable for data communication system between individual stations and CCC shall be provided by others.

Following is a list of parameters which shall be monitored and recorded by the Local and Remote Monitoring & Control System. The list is indicative only and shall be finalized according to Client/Project requirements:

- Data collection to verify the people counting, bus identification, bus arrival time to the station and bus departure time from the station.
- Station Status (operational/non operational)
- Door status (operational/non operational/Stand by - each door separately)
- Loss of Power/UPS status of each stations

- Emergency Stop Button (each door separately)
- Live Error Reporting (both at station level and central control room)
- Obstacle Detection
- Mains Power Failure
- Application software for local or remote stations.
- Connection to ■ local or remote PC to central server
- Remote intervention of security opening of one or groups of doors.
- Monitoring of peripheral devices.
- HMI- Human Machine Interface located in the station
- Operating cycle counter, maintenance alert and control settings.
- Allow sending of audible alert of use or emergency
- Operation history for assessment of usage statistics.
- Main control PC for integration with other devices of the monitoring system and connected to supervisory HMIs.
- Communication modules and communication cabling as required

### 3.3 Door Drive Mechanism

Actuator type shall be electric. The actuator shall be controlled by the associated DCU and include facilities to control position and speed of driven doors.

The actuators shall be precision built, brushless, high reliability permanent magnet motor type or an equivalent ac motor type. Motors coupled with low friction reduction gearbox drives shall be acceptable.

PSD Doors shall have ■ capacity to make 1000 to 1500 cycles of opening and closing daily.

The actuator shall operate the two door leaves via the door drive mechanism, interfacing with the door trolley assemblies.

The door drive mechanism shall be ■ heavy duty, positively engaged drive arrangement, achieving synchronized smooth movement of the door leaves compliant with the performance requirements.

Reinforced toothed belts for connection to the belt fittings and driving screws shall be acceptable drive mechanism types. Chain transmission shall not be acceptable.

The PSD shall be actuated by electromechanical means.

Door operator control and communication devices shall allow the synchronization of the doors and peripheral devices.

System should keep the doors closed and locked without the need to install an additional lock.

System allow the programming of door closing and with an alert through an acoustic and luminous alarm.

Each PSD shall be equipped with a built-in maintenance free batteries and charger which shall enable the door set to operate for 200 opening and closing operation in case of power failure.

All conductive parts of the door module like fixed panels, covers etc. shall be bonded to the header. Carbon brushes shall ensure the metal framework of the sliding doors is in electrical contact with the doorway header.

### 3.4 Door Operation

The time taken to start opening/closing of the PSD after receipt of the DOORS OPEN/DOORS CLOSE command signals from the Signaling Link shall be less than 0.3 second.

The time taken to open the PSD fully shall be 2.5 to 3.0 seconds and to close the doors fully shall be 3.0 to 3.5 seconds. The average velocities and the panel mass shall be limited by dynamic safety considerations.

Whenever closing door movement is obstructed, the door operation mechanism shall sense the obstruction and temporarily release the closing force. Automatic re-opening shall not be provided but manual opening to release the obstacle shall be possible for a short time before the closing force is restored. Restoration of the closing force shall not result in a slamming action of the doors.

Each PSD shall be equipped, on the trackside, with an easily accessible manual release device such that passengers leaving the bus can disengage the automatic drive and open the door manually in the event that a door does not open automatically, for example due to a power supply failure or control failure or local failure of a door operating mechanism.

Any door which has been manually released from track or platform side shall then be subjected to a gentle re-closing force, against which it can be pushed or held open, which shall ensure that the door returns safely to the closed and locked position afterwards, without need for staff intervention. For powered doors, the time delay for reclosing shall be adjustable between 0 to 120 seconds.

The obstacle detection with reversing/stopping function as squeeze protection.

### **3.5 Door Leaf / Panels**

The glazed door panel shall be provided with wiring suspension and accessories. Door opening width and height shall be according to project requirement. The door shoe shall be minimum 60 mm as per requirement of project / as approved by the engineer. The glass shall be tempered and laminated safety glass of minimum 10 mm thickness or as recommended by the manufacturer. The rubber gasket of high quality as per international standards.

### **3.6 PSD Structural Criteria**

The structural design of the PSDs shall be based on:

- A crowd loading of 3.0 kN at 1.1m height;
- An impact loading of 140 N sec applied as a half sine wave of amplitude 2.8 kN applied for 0.08sec over a 100mm x 100mm area;
- Vibration Isolators
- Seismic design criteria; and
- High level structural support.

Contractor shall provide calculations for structure design.

### **3.7 Vibration**

The limiting criteria for vibration generation shall be as per Class 1 applications as defined in BS 7854 'Mechanical Vibration – Evaluation of Machine Vibration by Measurements on non-rotating Parts. These figures shall be tested on the basis of an empty bus with all PSDs operating and bus doors open.

The design of the PSD shall minimize the ability of graffiti to be applied to its surfaces. It shall be resistant to physical abuse and mechanical damage. The PSD shall facilitate ease of removing graffiti, and replacement/repair of all components exposed to graffiti, physical abuse and mechanical damage.

### 3.8 PSD Configuration

#### Sliding Screen Door Opening Width and Height

Width of a pair of sliding screen doors shall be as per site/bus requirements. Door opening height shall be as per approval by Engineer.

#### Sliding Screen Door Closing Force

The target maximum shall be 133N per leaf with an absolute maximum closing force of 150N per leaf as per DIN 18650-1.

#### Sliding Screen Door Movement Kinetic Energy

The maximum door leaf kinetic energy shall not exceed 10 Joules while the door movement kinetic energy for the last 100mm of leaf travel shall be less than 1 Joule per leaf.

#### PSD Operation

PSDs shall have the following modes of operation:

- Normal
- Isolated / Maintenance (Individual sliding screen door Sets)

#### Driving Unit Location

The driving unit shall be located on the top of the door or as per manufacturer recommendation. All Civil Works including safety features required for the protection of PSD from dust/water are included in scope of work.

### 3.9 UPS ■ Battery for Emergency Operation

Online UPS Battery for emergency operation of the door in case of power failure, with load monitoring ensuring normal operation for minimum 30 min. The detail technical specification of the UPS is covered in relevant electrical specification section of UPS and shall be referred accordingly.

### 3.10 Surge Protector

A surge protector shall be in-built in each door. This device shall be designed to reduce the spikes in electricity that comes with surge. A fuse shall be provide with the surge protector.

Surge protection shall be 1- phase, 3-wire, 240 VAC AC line protection.

### 3.11 Platform Screen Doors shall have following minimum technical requirements:

Type	-	Outdoor VVVT type doors suitable for outdoor use
Design Life	-	30 years
Height & Width	-	Refer relevant architectural drawings for all stations of BRT
Storage	-	Data & Log
Driver Control	-	Wired / Wireless
Emergency Buzzer	-	Operator Room
Material	-	High quality aluminum section for mullion



Structure Support - Mild Steel (MS) section

#### **4.0 INSTALLATION**

##### **A. General**

The installation of PSD & Communication equipment including its electrical installations shall comply with applicable standards, manufacturer's instructions and recommendations. Electrical work required during installation shall comply with NFPA 70 or approved equivalent.

The scope of installation and civil works shall include the following:

- Providing and/or cutting all necessary holes, chiseling and openings and making good after installation of equipment.
- Supplying and fixing all supports, beams, ladders etc. necessary for the installation of the machinery, guide brackets, doors, buffers etc.
- Furnishing all necessary cement and/or concrete for 'grouting-in' brackets, bolts, etc.
- Providing and fixing suitable scaffolding and protection of work in progress.

##### **B. Welded Construction**

Welded construction shall be provided for installation of doors wherever bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, or replacement of worn parts. Welding workmanship and qualification of welding operators shall comply with American Welding Society (AWS) standards or approved equivalent.

##### **C. Sound Isolation**

Rotating and vibrating equipment and components shall be mounted on vibration - absorption mounts designed to effectively prevent the transmission of vibrations other structure, and there by eliminate the sources of structure - borne noise.

##### **D. Lubrication**

Operating parts of the system shall be lubricated as per manufacturer's recommendation.

##### **E. Vibration Isolation Mounts**

A vibration-absorption mounts shall be used which are designed to effectively prevent the transmission of vibrations to the structure, and thereby eliminate the sources of structure-borne noise resulting from the PSD system.

##### **F. Painting, Retouching ■ Re-finishing**

After completion of installation and testing to the satisfaction of the Engineer-in-Charge, the Contractor shall carryout all finishing, retouching and refinishing operation on the entire equipment accessories and installation matching the original finishing approved way. All auxiliary works carried out by the Contractor as the finished installation shall also be painted as per the approved standard after applying anticorrosive base.

## 5.0 MEASUREMENT ■ PAYMENT:

### 5.1 General

The Contractor bid amount, against each Bill of Quantities item as given below, shall include detailed engineering design, supply, installation, manufacture, transportation, storage, verification, laying, programming, configuration, integration, testing, commissioning, training and completion including all material, services, labour, tools & instruments for testing, servicing, operation & maintenance, accessories for all work specified in specifications and / or as shown on the Drawings.

### 5.2 Platform Screen Door (PSD) for each bus station (1 - 5):

**5.2.1 Measurement:** Measurement shall be made for the complete job of Platform Screen Doors (PSD) & Communication System comprising platform screen doors, bus docking system, local monitoring & control system, electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment complete in all respects acceptable by the Engineer.

**5.2.2 Payment:** Payment shall be made for Platform Screen Door (PSD) & Communication System for ■ complete job measured as provided above at the Contractor unit price and shall constitute full compensation for detailed engineering design, supply, installation, manufacture, transportation, storage, verification, laying, programming, configuration, integration, testing, commissioning, training, including all material, services, labour, tools & instruments for testing, servicing, operation & maintenance, accessories for Platform Screen Door (PSD) & Communication System comprising platform screen doors, bus docking system, local monitoring & control system, electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment as required complete in all respect.

### 5.3 Remote Monitoring of PSD for bus station (1 - 5):

**5.3.1 Measurement:** Measurement shall be made for the complete job of Remote Monitoring of PSD for bus station (1 - 5) comprising all component / equipment etc., electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc. complete in all respects acceptable by the Engineer.

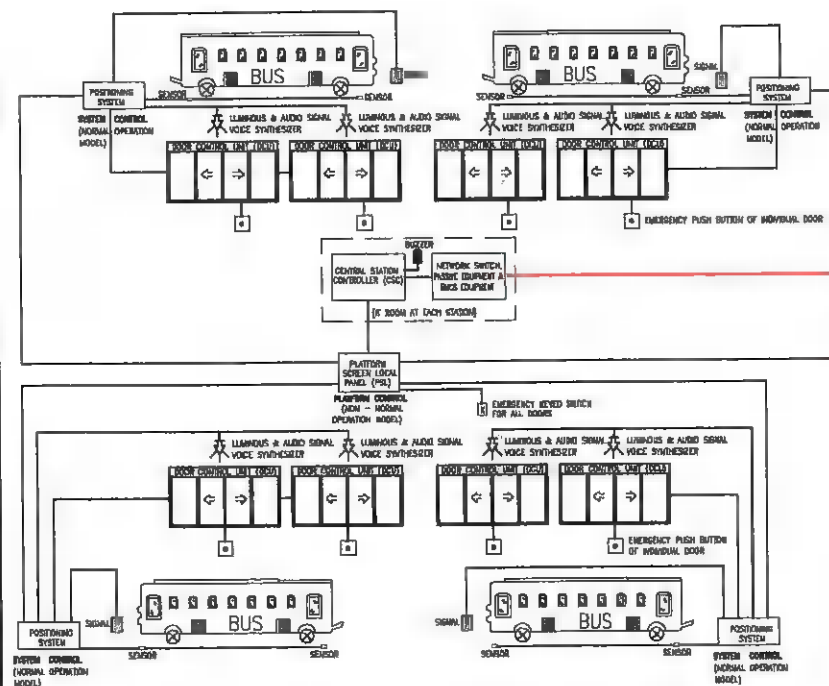
**5.3.2 Payment:** Payment shall be made for Remote Monitoring of PSD for bus station (1 - 5) for a complete job measured as provided above at the Contractor unit price and shall constitute full compensation for detailed engineering design, supply, installation, manufacture, transportation, storage, verification, laying, programming, configuration, integration, testing, commissioning, training, including all material, services, labour, tools & instruments for testing, servicing, operation & maintenance, accessories for Remote Monitoring of PSD for bus station (1 - 5) comprising all component / equipment etc., electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc. as required complete in all respects.

### 5.4 Spare parts:

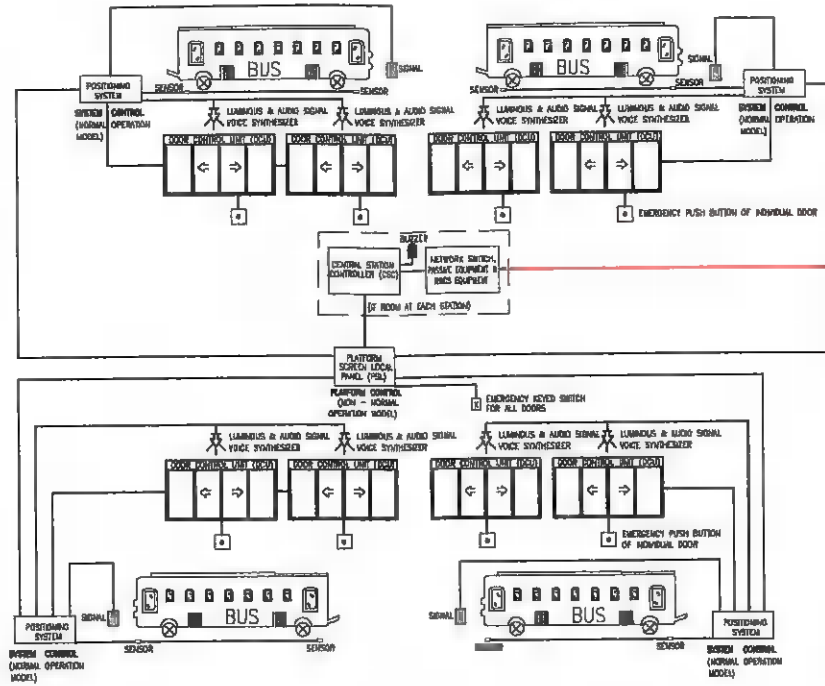
**5.4.1 Measurement:** Measurement shall be made for the complete Lot of spare parts for operation of Platform Screen Doors acceptable by the Engineer.

**5.4.2 Payment:** Payment shall be made for spare parts for a complete Lot measured as provided above at the Contractor unit price and shall constitute full compensation for supply of spare parts for operation of Platform Screen Doors as required complete in all respects.

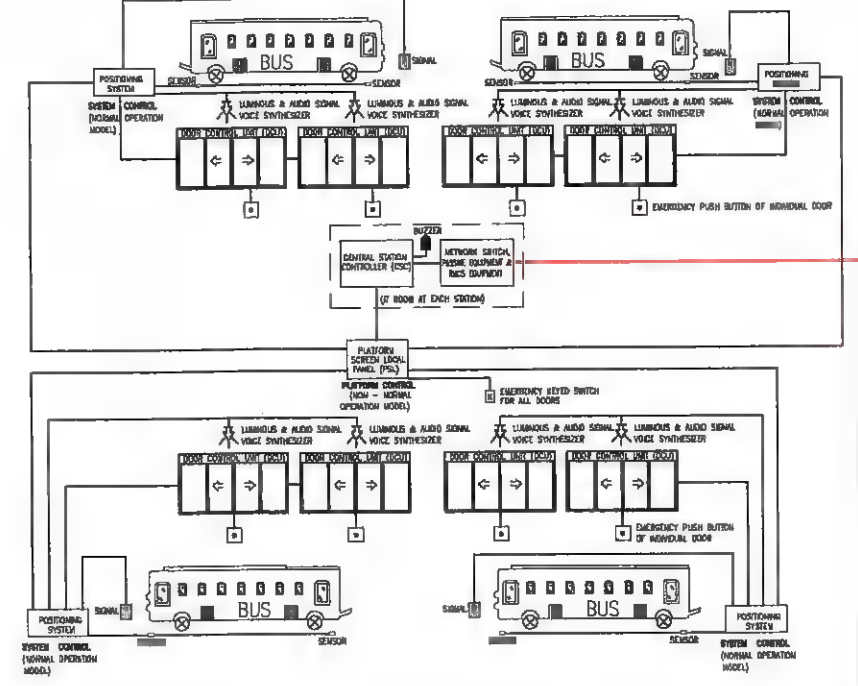
\*\*\* End of Section 8376 \*\*\*



STATION-1

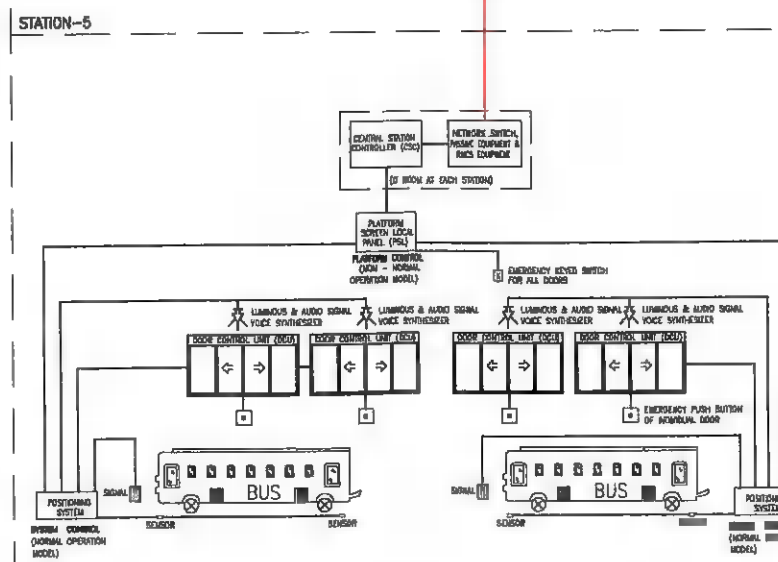


STATION-2

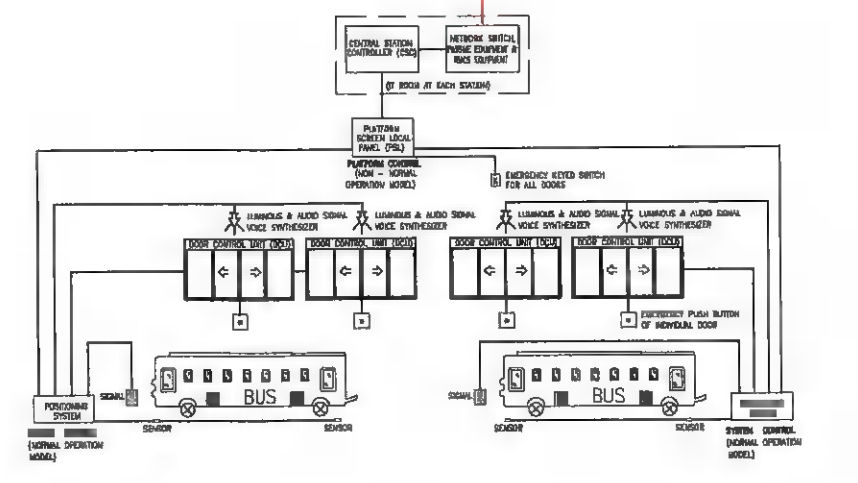


STATION-3

OPTIC CABLE (BY OTHERS)



STATION-5



STATION-4

# NOTES:

- 1- FOR DOORS HEIGHT & WIDTH, REFER RELEVANT ARCHITECTURAL DRAWINGS.
- 2- PSD CONTRACTOR SHALL CO-ORDINATE WITH INFRASTRUCTURE CONTRACTORS OF PACKAGE I & II FOR CIVIL WORKS OF RELEVANT BRT STATIONS.
- 3- PSD CONTRACTOR TO CO-ORDINATE WITH ITS CONSULTANT/CONTRACTOR FOR MONITORING OF PSD AT EACH STATION & REMOTE MONITORING IN COMMAND & CONTROL CENTER.
- 4- PSD CONTRACTOR TO CO-ORDINATE WITH BUS OPERATOR FOR TESTING & COMMISSIONING OF PSD OF EACH STATION.



**TRANSPORT & MASS  
TRANSIT DEPARTMENT,  
GOVERNMENT OF SINDH**



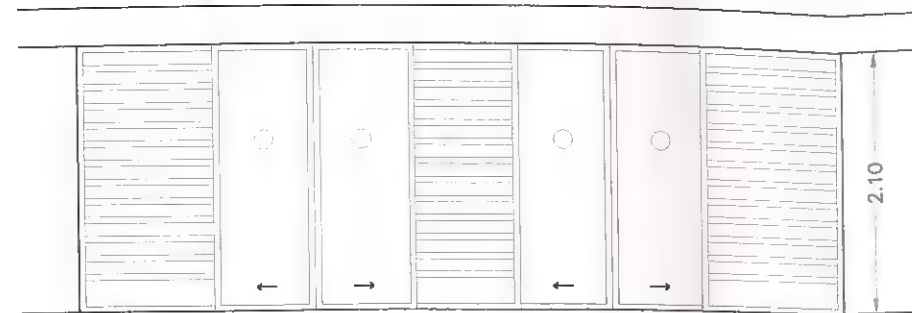
**NATIONAL ENGINEERING SERVICES  
PAKISTAN (PVT.) LIMITED**  
13th Floor, N.E.C. Building, Abbasi Shaheed Road,  
Off: Shohro-e-Faisal, Karachi-74400 P.O. Box 5772, Karachi Pakistan  
Ph. No. (021) 9903000, 9925277-84 Fax No. (021) 35651994, 9925236  
E-mail: nesppk@gmail.com Website: www.nesppk.com.pk

D				DRAWN	S.M.
C				DESIGNED	Ali
B				CHECKED	Ali
A				APPROVED	Ali
REV.	DATE	DESCRIPTION			
	AUG, 2018	ISSUED FOR BIDDING			
		DESCRIPTION			

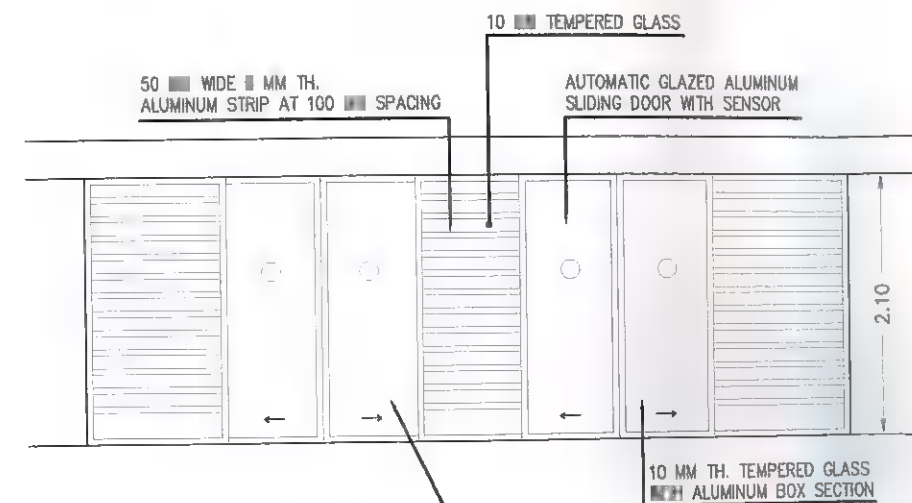
**SUPPLY AND INSTALLATION OF  
PLATFORM SCREEN  
DOORS AT BUS STATIONS (1 TO 5)  
AT BRTS ORANGE LINE**

## BIDDING DRAWING

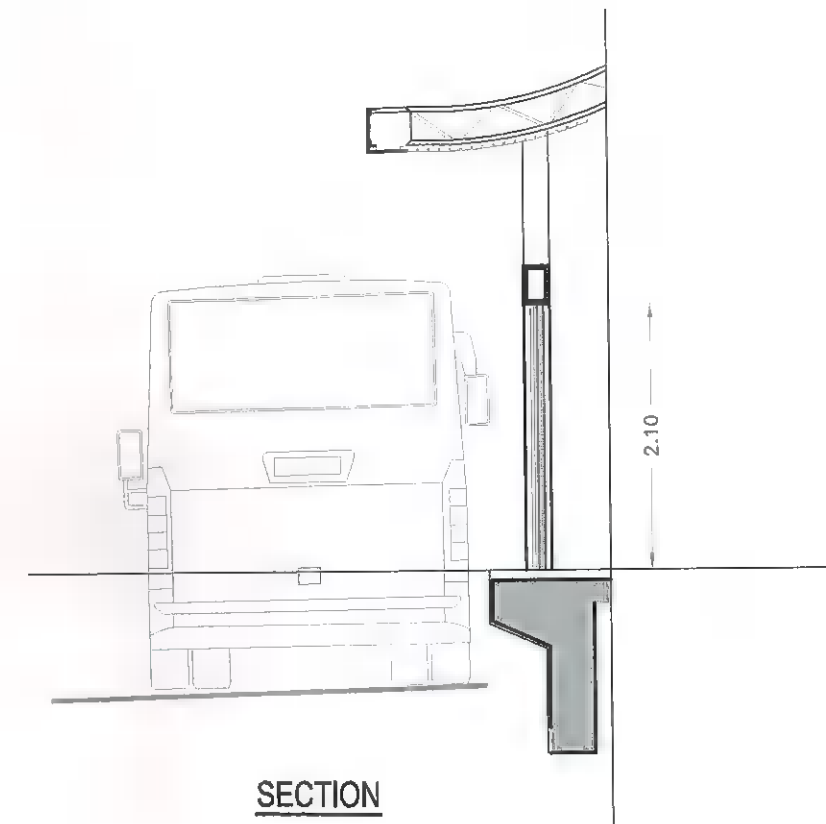
TITLE	PLATFORM SCREEN DOORS AT STATION (1 TO 5) BUS DOCKING, SCREEN & COMMUNICATION SYSTEMS	SCALE	NTS
DATE	DWG. No.	REVISION	0
AUG, 2018	3771/50B/BD/00E001		



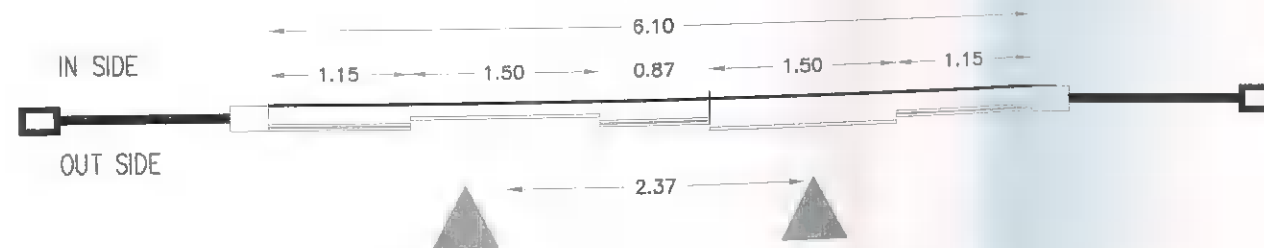
**IN SIDE ELEVATION**



**OUT SIDE ELEVATION**



**SECTION**



**PLAN**



**TRANSPORT & MASS  
TRANSPORT DEPARTMENT,  
GOVERNMENT OF SINDH**



**NATIONAL ENGINEERING SERVICES  
PAKISTAN (PVT.) LIMITED**  
Floor, N.E.C. Building, Abbas Shah Road,  
Off: Shalimar - Faisal, Karachi-74400 P.O. Box 5772, Karachi  
Ph. No. (021) 99090000, 9925277-84 No. (021) 35651994, 9922536  
E-mail: nespa@gmail.com www.nespa.com.pk

4			DESIGNED	
3			CHECKED	
2			APPROVED	
1				
0	AUG, 2018	ISSUED FOR BIDDING		
REV.	DATE	DESCRIPTION		

**SUPPLY AND INSTALLATION OF  
PLATFORM SCREEN  
DOORS AT BUS STATIONS (1 TO 5)  
AT BRTS ORANGE LINE**

**BIDDING DRAWING**

TITLE	PLATFORM SCREEN DOOR AT STATION (1 TO 5)	SCALE	N.T.S
DATE	AUG, 2018	DWG. No.	3771/08/00/00B009
		REVISION	0

**KARACHI MASS TRANSIT CELL, TRANSPORT AND  
MASS TRANSIT DEPARTMENT,  
GOVERNMENT OF SINDH  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
ENGINEER'S ESTIMATE**

**PLATFORM SCREEN DOORS (PSD)**

Item No.	Description	Unit	Qty	Rate (Rs)	Amount (Rs.)
----------	-------------	------	-----	-----------	--------------

**Platform Screen Doors (PSD)**

Detailed engineering design, supply, installation, manufacture, transportation, storage, verification, laying, programming, configuration, integration, testing, commissioning, training, labour, tools for operation & maintenance and accessories of the following job for proper completion of item as per Drawings, Technical Specifications, other provisions of Contract.

- 1T Platform screen doors, bus docking system, local monitoring & control system, all electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc., Complete in all respects.

a)	BRT Station No.1 having 8 doors for 4 buses.	Job	1	15,342,729.30 → 17,170,822	17,170,822
----	--	-----	---	-------------------------------	------------

Unit Rate in words .....

b)	BRT Station No.2 having 8 doors for 4 buses.	Job	1	15,342,729.30 → 17,170,822	17,170,822
----	--	-----	---	-------------------------------	------------

Unit Rate in words .....

c)	BRT Station No.3 having 8 doors for 4 buses	Job	1	15,342,729.30 → 17,170,822	17,170,822
----	---	-----	---	-------------------------------	------------

Unit Rate in words .....

d)	BRT Station No.4 having 4 doors for 2 buses.	Job	1	7,67,1364.10 → 8,585,411	8,585,411
----	--	-----	---	-----------------------------	-----------

Unit Rate in words .....

- 2T Remote Monitoring of PSD for bus station (1 to 4) including all component / equipment etc., all electrical and civil works, all interconnecting cables & conduit. Complete in all respects.

Job	1	1888782.80 → 2,113,832	2,113,832
-----	---	---------------------------	-----------

Unit Rate in words .....

**KARACHI MASS TRANSIT CELL, TRANSPORT AND  
MASS TRANSIT DEPARTMENT,  
GOVERNMENT OF SINDH  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
ENGINEER'S ESTIMATE**

**PLATFORM SCREEN DOORS (PSD)**

Item No.	Description	Unit	Qty	Rate (Rs)	Amount (Rs.)
----------	-------------	------	-----	-----------	--------------

3T Spare parts for minimum two (02) years operation of 28 Nos. Platform Screen Doors after completion of defects liability period. Lot 1 8,221,909.60 → 9,183,349 9,183,349

*Unit Rate in words* .....

4T Operation (18 hrs/day, 07 days/week & 365 days/year) for two (02) years Defects Liability Period. (Full time Operational Staff included) Month 24 927262 22,254,312 1,035,693 24,856,632

*Unit Rate in words* .....

5T Maintenance for two (02) years Defects Liability Period. Month 24 271137 6,507,312 302,843 7,268,232

*Unit Rate in words* .....

Total Amount of PSD  
Carried over to Summary of Cost

103,519,922

New Sum = 92,571,869

KARACHI MASS TRANSIT CELL, TRANSPORT, AND TRANSIT DEPARTMENT,  
GOVERNMENT OF  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
RATE ANALYSIS  
TELECOMMUNICATION WORKS

PLATFORM SCREEN DOORS (PSD)

ITEM 1T (a)/(b)/(c)  
UNIT: Job

DESCRIPTION:- BRT Station No.1/2/3 having 8 doors for 4 buses. Platform screen doors, bus docking system, local monitoring & control system, all electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc. Complete in all respects.

Detail	Unit	Quantity	Rate	Amount
--------	------	----------	------	--------

Detail for 1 Job.

A. MATERIAL

BRT Station No.1/2/3 having 8 doors for 4 buses. Platform screen doors, bus docking system, local monitoring & control system, all electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc. Complete in all respects.

Job	1	10,597,637	10,597,637
Total of "A"			10,597,637

B. Installation & Labour

Total of "B"			529,882
--------------	--	--	---------

C. Testing & Commissioning

Total of "C"			1,059,764
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D. Basic Cost (A+B+C)

Total of "D"			12,187,283
--------------	--	--	------------

E. G.S.T (17% of A)

17% 1,801,598

F. Income Tax component of GST (7.5% of E)

7.5% 135,120

G. Total Cost (D+E+F)

14,124,001

H. Add Contractor's overhead & Profit (25% of D)

10% of D

25% 3,046,821

I. Grand Cost (G+H)

Job 1 17,170,821

Rate for One Job.Rs.	17,170,821.35
say Rs.	17,170,822

→ MCH

12,187,283.30

15,342,729.30

**KARACHI MASS TRANSIT CELL, TRANSPORT, AND TRANSIT DEPARTMENT,  
GOVERNMENT OF  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
RATE ANALYSIS  
TELECOMMUNICATION WORKS**

**PLATFORM SCREEN DOORS (PSD)**

ITEM 1T (d)

UNIT: Job

DESCRIPTION:- BRT Station No.4 having 4 doors for 2 buses. Platform screen doors, bus docking system, local monitoring & control system, all electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc. Complete in all respects.

Detail	Unit	Quantity	Rate	Amount
--------	------	----------	------	--------

Detail for 1 Job.

**A. MATERIAL**

BRT Station No.4 having 4 doors for 2 buses. Platform screen doors, bus docking system, local monitoring & control system, all electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc. Complete in all respects.

Job	1	5,298,819	5,298,819
Total of "A"			5,298,819

**B. Installation & Labour**

Total of "B"			264,941
--------------	--	--	---------

**C. Testing & Commissioning**

Total of "C"			529,882
--------------	--	--	---------

**D. Basic Cost (A+B+C)**

Total of "D"			6,093,641
--------------	--	--	-----------

**E. G.S.T (17% of A)**

17% 900,799

**F. Income Tax component of GST (7.5% of E)**

7.5% 67,560

**G. Total Cost (D+E+F)**

7,062,000

**H. Add Contractor's overhead & Profit (25% of D)**

25% 1,523,410

**I. Grand Cost (G+H)**

Job 1 8,585,411

Rate for One Job.Rs.	8,585,410.67
say Rs.	8,585,411

MGH ÷ 2

609,364.10

7671364.10



**KARACHI MASS TRANSIT CELL, TRANSPORT, AND TRANSIT DEPARTMENT,  
GOVERNMENT OF  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
RATE ANALYSIS  
TELECOMMUNICATION WORKS  
PLATFORM SCREEN DOORS (PSD)**

ITEM

2T

UNIT: Job

DESCRIPTION:- Remote Monitoring of PSD for bus station (1 to 4) including all component / equipment etc., all electrical and civil works, all interconnecting cables & conduit. Complete in all respects.

Detail	Unit	Quantity	Rate	Amount
--------	------	----------	------	--------

Detail for 1 Job.

**A. MATERIAL**

Remote Monitoring of PSD for bus station (1 to 4) including all component / equipment etc., all electrical and civil works, all interconnecting cables & conduit. Complete in all respects.

Job	1	1,304,633	1,304,633
Total of "A"			1,304,633

**B. Installation & Labour**

Total of "B"			65,232
--------------	--	--	--------

**C. Testing & Commissioning**

Total of "C"			130,463
--------------	--	--	---------

**D. Basic Cost (A+B+C)**

Total of "D"			1,500,328
--------------	--	--	-----------

**E. G.S.T (17% of A)**

17% 221,788

**F. Income Tax component of GST (7.5% of E)**

7.5% 16,634

**G. Total Cost (D+E+F)**

1,738,750

**H. Add Contractor's overhead & Profit (25% of D)**

25% 375,082

**I. Grand Cost (G+H)**

Job 1 2,113,832

Rate for One Job.Rs.	2,113,831.62
say Rs.	2,113,832

→ MGH  
150032.80  
1888782.80

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GOVERNMENT OF  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
RATE ANALYSIS  
TELECOMMUNICATION WORKS  
PLATFORM SCREEN DOORS (PSD)

ITEM 3T

UNIT: Lot

DESCRIPTION:- Spare parts for minimum two (02) years operation of 28 Nos. Platform Screen Doors after completion of defects liability period.

Detail	Unit	Quantity	Rate	Amount
--------	------	----------	------	--------

Detail for 1 Lot

A. MATERIAL

Spare parts for minimum two (02) years operation of 28 Nos. Platform Screen Doors after completion of defects liability period.

Lot	1	6,409,596	6,409,596
Total of "A"			6,409,596

B. Installation & Labour

Total of "B"	Not applicable
--------------	----------------

C. Testing & Commissioning

Total of "C"	Not applicable
--------------	----------------

D. Basic Cost (A+B+C)

Total of "D"	6,409,596
--------------	-----------

E. G.S.T (17% of A)

17% 1,089,631

F. Income Tax component of GST (7.5% of E)

7.5% 81,722

G. Total Cost (D+E+F)

7,580,950

H. Add Contractor's overhead & Profit (75% of D)

25% 10% 1,602,399

I. Grand Cost (G+H)

Job 1 9,183,349

Rate for One Lot.Rs.	9,183,348.67
say Rs.	9,183,349

MAH  
640954.60  
8221,909.60

**KARACHI MASS TRANSIT CELL, TRANSPORT, AND TRANSIT DEPARTMENT,  
GOVERNMENT OF  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
RATE ANALYSIS  
TELECOMMUNICATION WORKS**

**PLATFORM SCREEN DOORS (PSD)**

ITEM 4T

UNIT: Month

DESCRIPTION:- Operation (18 hrs/day, 07 days/week & 365 days/year) for two (02) years Defects Liability Period. (Full time Operational Staff included)

Detail	Unit	Quantity	Rate	Amount
--------	------	----------	------	--------

Detail for 1 Month

**A. MATERIAL**

Operation (18 hrs/day, 07 days/week & 365 days/year) for two (02) years Defects Liability Period. (Full time Operational Staff included)

Months	24	722,870	17,348,890
Total of "A"			17,348,890

**B. Installation & Labour**

Total of "B"	Not applicable
--------------	----------------

**C. Testing & Commissioning**

Total of "C"	Not applicable
--------------	----------------

**D. Basic Cost (A+B+C)**

Total of "D"	17,348,890
--------------	------------

**E. G.S.T (17% of A)**

17%	2,949,311
-----	-----------

**F. Income Tax component of GST (7.5% of E)**

7.5%	221,198
------	---------

**G. Total Cost (D+E+F)**

20,519,400

**H. Add Contractor's overhead & Profit (25% of D)**

25%	4,337,223
-----	-----------

**I. Grand Cost (G+H)**

Job	1	24,856,623
-----	---	------------

Rate for One Month Rs.	1,035,692.61
say Rs.	1,035,693

MGH

1734889

22254289

927262.0417

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GOVERNMENT OF  
BUS RAPID TRANSIT SYSTEM (BRTS)  
INFRASTRUCTURE DEVELOPMENT  
RATE ANALYSIS  
TELECOMMUNICATION WORKS  
PLATFORM SCREEN DOORS (PSD)

ITEM

5T

UNIT: Month

DESCRIPTION:- Maintenance for two (02) years Defects Liability Period.

Detail	Unit	Quantity	Rate	Amount
--------	------	----------	------	--------

Detail for 1 Month

A. MATERIAL

Maintenance for two (02) years Defects Liability Period.

Months	24	211,372	5,072,923
Total of "A"			5,072,923

B. Installation & Labour

Total of "B"	Not applicable
--------------	----------------

C. Testing & Commissioning

Total of "C"	Not applicable
--------------	----------------

D. Basic Cost (A+B+C)

Total of "D"	5,072,923
--------------	-----------

E. G.S.T (17% of A)

17% 862,397

F. Income Tax component of GST (7.5% of E.)

7.5% 64,680

G. Total Cost (D+E+F)

6,000,000

H. Add Contractor's overhead & Profit (25% of D)

25% 1,268,231

I. Grand Cost (G+H)

Job 1 7,268,231

Rate for One Month Rs.	302,842.95
say Rs.	302,843

→ MGH

50729230

→ 650729230

2711371792

Attn: Mr, Noman Ahmed

Date: 20-11-20

To, M/S NESPAK

Project: Orange Line Metro Bus service Karachi Rev 1.5

**QUOTATION FOR PLATFORM SCREEN DOORS (PSD) ORANGE LINE METRO KARACHI**

Item No.	Description	Unit	Qty	Rate (RS)	Amount (RS)
<b>Platform Screen Doors (PSD)</b>					
	Detailed engineering design, supply, installation, manufacture, transportation, storage, verification, laying, programming, configuration, integration, testing, commissioning, training, labour, tools for operation & maintenance and accessories of the following job for proper completion of item as per Drawings, Technical Specifications, other provisions of Contract. Bidder shall submit in the bid a detail break-up for each of the following jobs along with description of material, make, model, country of origin, quantities of individual items comprising a complete job in attached Appendices IV to X.				
02-1T	Platform screen doors, bus docking system, local monitoring & control system, all electrical and civil works, all interconnecting cables & conduit, any other required essential component / equipment etc., Complete in all respects.				
a)	BRT Station No.1 having 8 doors for 4 buses.	Job	1	14,124,000	14,124,000
b)	BRT Station No.2 having 8 doors for 4 buses.	Job	1	14,124,000	14,124,000
c)	BRT Station No.3 having 8 doors for 4 buses.	Job	1	14,124,000	14,124,000
d)	BRT Station No.4 having 8 doors for 4 buses.	Job	1	14,124,000	14,124,000
02-2T	Remote Monitoring of PSD for bus station (1 - 4) including all component / equipment etc., all electrical and civil works, all interconnecting cables & conduit	Job	1	1,738,750	1,738,750
02-3T	Spare parts for minimum two (02) years operation of 32 Nos. Platform Screen Doors (Appendix-X)	Lot	1	7,580,950	7,580,950
02-4T	Operation (18 hrs/day, 07 days/week & 365 days/year) (Full time Operational Staff included)	Month	24	854,975	20,519,400
02-5T	Maintenance for two (02) years Defects Liability Period.	Month	24	250,000	6,000,000
02-6T	Pre-shipment inspection for 2 persons	Ls	1	1,000,000	1,000,000
<b>Total Amount of Code 02</b>					<b>93,335,100</b>
<b>Carried over to Summary of Cost</b>					

- 1) Prices are FOR basis Karachi
- 2) Our above prices are inclusive of 5% for Installation, 10% testing, commissioning & 17 % GST & 7.5% WHT.
- 3) Taxes Included
- 4) No warranty for Broken Glass
- 5) No Warranty for Burned & broken Items.
- 6) Spare List attached (ANX-A)  
Equipment availability, Ex-Stock Available in Karachi

Best Regard,  
Dr. Muhammad Mansoor



**MGH ENGINEERING CONTROL (pvt) LTD.**

94-B, Sunflower society, J-1, Johar Town, Lahore.

Phone: +92-4235314521-22, Fax: +92-423-5314520

E-Mail: info@mgheng.com, Website: www.mgheng.com



CHIEF MINISTER'S SECRETARIAT, SINDH  
KARACHI

NO.SO(C-II)/CMS/GS/10-211/2015  
Karachi, dated 25<sup>th</sup> March, 2015

To,

1. The Chief Secretary, Sindh,  
Karachi.
2. The Secretary,  
Finance Department,  
Government of Sindh,  
Karachi.

SUBJECT;- DRAFT MINUTES OF 13<sup>TH</sup> MEETING OF PUBLIC PRIVATE  
PARTNERSHIP (PPP) POLICY BOARD.

I am directed to refer to your department letter No.FD/PPPUNIT/PB  
13(2015) dated 26<sup>th</sup> January, 2015 on the subject noted above and to enclose  
herewith a copy of the draft minutes of the 13<sup>th</sup> PPP Policy Board meeting; duly  
approved by the Honorable Chief Minister Sindh for taking further necessary  
action in the matter at your end.

25/3/15  
DEPUTY SECRETARY (COORD)

S.F.S (DBE)
S.F.S (DEV)
S.F.S (RES)
A.F.S (DBE)
A.F.S (DEV)
A.F.S (RES)
A.F.S (LF)
A.F.S (ADMN)
D.S (LEGAL)

CC to:-

PSO to Principal Secretary to Chief Minister, Sindh, Karachi.

DR/PPP

Sandhu



Partnership for Development

No:FD/PPPUNIT/PB13(2015)

FINANCE DEPARTMENT

GOVERNMENT OF SINDH

DATED: 26<sup>TH</sup> JANUARY 2015

A.K LODHI COMPLEX SINDH SECRETARIAT BUILDING NO. 6  
SHAHRAH-E-KAMAL ATA TURK, KARACHI - P.E (021) 99222188

To,

The Principal Secretary to Chief Minister, Sindh  
Chief Minister's Secretariat  
Karachi

**SUBJECT: DRAFT MINUTES OF 13<sup>TH</sup> MEETING OF PUBLIC PRIVATE PARTNERSHIP (PPP) POLICY BOARD**

The 13<sup>th</sup> meeting of Public Private Partnership (PPP) Policy Board was held under the chairmanship of Honourable Chief Minister, Sindh being the Chairman of PPP Policy Board on 9<sup>th</sup> January 2015 at Chief Minister's Secretariat, Karachi to review and approve the PPP projects.

2. It is requested that the draft minutes of the 13<sup>th</sup> PPP Policy Board meeting may kindly be submitted for approval from the Honourable Chief Minister, Sindh.

(MUJTABA SHAHNEEL)  
Director General  
PPP Unit, Finance Department,  
Government of Sindh

Copy for information to:

1. R.O to Chief Secretary, Government of Sindh
2. P.S to Minister Finance and Energy
3. P.S to Secretary, Finance Department, Government of Sindh
- ✓ 4. Master File



Partnership for Development

NO: FD(PPPUNIT)/PB/M13  
GOVERNMENT OF SINDH  
FINANCE DEPARTMENT  
Karachi, dated Jan 26<sup>th</sup> 2015

7<sup>th</sup> Floor, AK Lodhi Complex, Sindh Secretariat # 6,  
Shahreh-e- Kemal Ata Turk, Karachi Ph: (021) 99222194  
[www.pppunitsindh.gov.pk](http://www.pppunitsindh.gov.pk)

## **MINUTES OF 13<sup>TH</sup> MEETING OF PUBLIC PRIVATE PARTNERSHIP (PPP) POLICY BOARD**

The 13<sup>th</sup> meeting of the Public Private Partnership (PPP) Policy Board (the **PPP Policy Board**) was held on FRIDAY, JANUARY 09<sup>th</sup>, 2015 at the Chief Minister House under the chairmanship of the HONORABLE CHIEF MINISTER, SINDH (the **Chairman**). The list of participants is attached as [ANNEXURE A] and the working paper is attached as [ANNEXURE B].

2. The Chairman welcomed the members and participants of the PPP Policy Board and requested Principal Secretary to the Chairman to recite a few verses of the Holy Quran. The Chairman thereafter requested the Minister Finance & Energy to present the agenda before the honorable members. The Minister on Finance & Energy commended the various PPP initiatives undertaken by the Government of Sindh (the **GoS**) and further welcomed all the members present. The Minister on Finance & Energy then requested Secretary Finance, GoS to put forward the agenda before the PPP Policy Board and update the forum on various projects undertaken so far.

### **AGENDA NO. 1 - CONFIRMATION OF 12<sup>TH</sup> PPP POLICY BOARD MINUTES**

3. The Secretary Finance, GoS welcomed the members of the PPP Policy Board and presented the minutes of the meeting for the 12<sup>th</sup> PPP Policy Board Meeting [attached as ANNEXURE C] for ratification and approval by the members. The Chairman invited all members for any comments or suggestions. None of the members of the PPP Policy Board raised any reservations or objections on the decisions approved in the 12<sup>th</sup> PPP Policy Board meeting.

**Decision:** The PPP Policy Board accorded its approval and confirmed the decisions made in the 12<sup>th</sup> meeting of the PPP Policy Board.

### **AGENDA NO. 2 - APPROVAL OF PREFERRED BIDDER FOR THE SHAHEED BENAZIR BILUTTO INTERCITY BUS PROJECT**

4. The Secretary Transport & Mass Transit Department, GoS (the **Secretary Transport**) introduced the project to the PPP Policy Board. He informed the forum that this intercity bus project (the **InterCity Bus Project**) covers a total of five (5) routes starting from Karachi city to other major cities of Sindh province namely Hyderabad, Mirpurkhas, Sukkur, Benazirabad, and Larkana. Secretary Transport further informed that Daewoo Pakistan Express Bus Service Ltd. (the **Daewoo**) was the sole bidder that submitted its bid in response to the Request For Proposal (RFP) issued by the Transport and Mass Transit Department (the **TMTD**) and has been duly qualified as preferred bidder in the bid evaluation process in accordance with the Sindh Public Procurement Rules, 2010 (the **SPPR**), as amended from time to time. The Secretary, Transport then requested the Director, PPP Unit to present the financial structure of the project

*M. J. Shah*



to the forum. The Director, PPP Unit informed the members that the bid received for the InterCity Bus Project was for PKR Two Billion (2,000,000,000) and the financing for the same is divided into 25% equity and 75% commercial debt, whereby; the preferred bidder has requested the GoS to inject twenty (20%) percent of the commercial debt as mezzanine debt to make the project bankable.

5. Mr. M.A Jabbar inquired as to the need of providing twenty (20%) percent mezzanine financing by the GoS. The Director, PPP Unit responded that during the negotiations, Daewoo requested the GoS to give financial guarantee against the commercial debt being taken by the private party from the consortium of banks for the Project. The quantum of debt based financing of PKR 1.5 billion is a difficult proposition for the banks due to the fact that debt service coverage for the project as per the financial structure/model stands at an average 1.3. Due to the relatively weak coverage the exposure of the banks was substantive. However, the GoS declined the request, and rather inclined to inject part of debt as mezzanine debt to make the project bankable, which was finalized at twenty (20%) percent after serious negotiations between both the parties. The Director, PPP Unit further clarified that the mezzanine debt will be negotiated on the same terms, as of the commercial loan by the private banks; however, the mezzanine debt may have a second charge over the project assets. Further, the GoS will recoup its mezzanine financing from the InterCity Bus Project over the same tenure as the commercial lending. Moreover, the Additional Chief Secretary (Dev.) supported the InterCity Bus Project by saying that there is a dire need of intercity bus services across the province and the provision of terminal and ancillary facilities will be an additional step towards the betterment of intercity transport services across Sindh.

6. The Minister Transport & Mass Transit Department, GoS inquired about the fare that would be charged for the bus services and how would it be determined. The Secretary Transport responded that the fares would be in accordance with the government notified rates for intercity buses, as changed and notified from time to time along with the service charge, which is initially determined at PKR 0.4 per km/per passenger, for terminal and other ancillary facilities that will be provided by Daewoo. Mr. M.A Jabbar suggested setting up an independent regulatory body to adjust and monitor the revision of fares on a quarterly basis. The Secretary Transport replied that the fares in respect of the InterCity Bus Project would be quarterly revised, as proposed by the independent auditor and then informed / approved by the TMTD (depending on the reason for revision), against already fixed formulae agreed between the parties.

7. The Special Assistant to Chief Minister further clarified that the fares and the quarterly revisions thereof, will be properly regulated, as opposed to the de-regulated system of the bus fares in other provinces, where the government is paying heavy annual subsidies to the keep the fares reasonable for general public. He further added that the fares cannot be changed but for the information and/or approval of the TMTD. The Chairman added that the fares should be adjusted against the decreasing fuel prices and the same should be determined in advance to avoid any conflicts at the time of operations. Mr. M.A. Jabbar emphasized to ensure that the fares should not be unilaterally and arbitrarily changed by the private party, where it was clarified that the concession agreement for the InterCity Bus Project does not allow for the same.

**Decision:** The PPP Policy Board accorded its approval for Daewoo Pakistan Express Bus Service Ltd. as the preferred bidder and authorized the Secretary Transport & Mass Transit Department to sign the Concession Agreement with the project company to be incorporated by the Daewoo. Furthermore, the PPP Policy Board authorized the injection

*my shah*

of the required equity of twenty (20) percent mezzanine debt to make the project bankable.

AGENDA NO. 3 – STRENGTHENING OF MOTOR VEHICLE INSPECTION (MVI) WING AFTER TRANSFERRING FROM POLICE DEPARTMENT TO TRANSPORT & MASS TRANSIT DEPARTMENT, GOVERNMENT OF SINDH.

8. The Secretary Transport briefed the PPP Policy Board that the Motor Vehicle Inspection (MVI) Wing (the **MVI Wing**) has been transferred to the TMTD, on 11<sup>th</sup> December 2014 in pursuance of 'Provincial Vehicle (Amendment) Act' 2014. The Secretary Transport informed the forum that the TMTD does not have the technical capacity to check and assess the fitness of motor vehicles by itself. The fitness certificates issued by the previous MVI Wing (before the Amendment was passed) was probably given on the basis of visual examination of the vehicles, which was futile in the real sense. The Secretary Transport added that, whenever any major accident happens in the province, the relevant courts write to the TMTD, to look into the matter. Therefore, the Secretary Transport, GoS proposed that the investor solicitation is sought to oversee the management and operations of MVI Wing under the PPP mode through International Competitive Bidding and establish high standard MVI Centers with modern and well-equipped facilities. He further proposed that the proposed private partner should establish fixed as well as mobile inspection centers at divisional and/or district levels. As a result of this, commercial vehicles of all ages and other vehicles having a life of more than 5 years should get fitness certificate from Motor Vehicle Inspection (MVI) Wing. The Secretary Transport also proposed that the current fee structure for issuance of the fitness certificate(s) should also be revised by the GoS.

9. The Additional Chief Secretary (Dev.) strongly supported the project as well as the suggestions made by the Secretary Transport. He reiterated that the TMTD does not have the technical expertise and the project should be launched under PPP mode. He added that the commercial vehicles specially mini-buses that are operative on the roads are in deplorable condition and emit heavy smoke that is dangerous to the environment. He further added that the TMTD should do a prototype project with a mandatory requirement of fitness certificate for all commercial vehicles, so that the ratio of road accidents may be reduced. Mr. M. A. Jabbar commended the idea and supported the project to be undertaken under the PPP mode.

**Decision:** The PPP Policy Board approved the project concept and directed the Transport and Mass Transit Department to develop the project under PPP mode in association with the PPP Unit. The PPP Policy Board also accorded its approval to market the project for the Private Partner solicitation as per the identified PPP structure.

AGENDA NO. 4 – APPROVAL FOR UNDERTAKING BUS OPERATION AND FARE COLLECTION/ITS COMPONENT OF BRT GREEN AND ORANGE LINES UNDER PPP MODE

10. The Secretary Transport, briefed the PPP Policy Board that the infrastructure component for 'BRTS – Green Line Project' and 'BRTS – Orange Line Project' is being under-taken under the traditional mode by the federal government and provincial governments respectively. The Secretary Transport proposed that the Bus Operations and Fare Collection/ITS are on-going and operational activities, therefore, both the components of BRT Green and Orange Lines should be under taken under the PPP mode. The Additional Chief Secretary (Dev.) supported the Secretary Transport and informed that the steering committee has been constituted for the infrastructure component of the BRTS Green Line that is to be undertaken by the federal government, whereas the other two components may be approved to be launched under the PPP mode by the PPP Policy Board.

*M. A. Jabbar*

**Decision: The PPP Policy Board accorded its approval to market the project for Private Partner solicitation as per the identified PPP structure.**

AGENDA NO. 5 – APPROVAL FOR PDF FUNDING FOR BRTS-ORANGE LINE AS ADDITIONAL SCOPE OF WORK FOR CONSULTANTS OF BRTS YELLOW-LINE TO PREPARE PC-I FOR THE BRTS- ORANGE LINE

11. The Secretary Transport informed the PPP Policy Board that the TMTD had hired a consortium of KPMG, NESPAK and Mohsin Tayebaly Co. as consultants for the BRTS-Yellow Line project. The Secretary Transport proposed that the scope of that consultancy may be increased to include preparation of PC-I in respect of Green Line Project and feasibility of the BRTS - Orange Line from the existing contract of BRT Yellow Line for Transaction Advisory services and the payment of the same shall be made through the Project Development Facility (PDF) fund. The preparation of the PC-I and feasibility of the BRTS - Green Line was added as an additional scope of the BRTS Yellow Line and approved during the 12<sup>th</sup> PPP Policy Board meeting (the minutes of meeting is attached as [Annexure C]). The Secretary Finance supported the suggestions made by the Secretary Transport and added that the existing consortium members have already worked on the BRTS systems, therefore, the same would result in significant saving of time and cost.

**Decision: The PPP Policy Board accorded its approval to approve additional scope of work of consultants of 'BRTS Yellow Line Project' for preparation of PC-I in respect of Green Line Project and feasibility of the BRTS - Orange Line**

AGENDA NO. 6 – CONFIRMATION OF SIGNING OF SERVICES & MANAGEMENT AGREEMENT WITH BOOK GROUP WITH REGARDS TO MANAGEMENT OF SCHOOLS AT KHAIRPUR

12. The Secretary Finance, GoS informed the PPP Policy Board that, in pursuance of the decision taken in the 12<sup>th</sup> PPP Policy Board meeting dated 12<sup>th</sup> September, 2014, pertaining to the Education Management Organizations (EMOs), the Technical and Financial Evaluation Committee (TFEC), as constituted by the Chief Secretary, Sindh, on the request of Education and Literacy Department, GoS, has recommended the name of M/s Book Group, an education management organization, to manage three (3) government schools (as listed below) in Khairpur district of the Sindh province under the services and management agreement. The schools are as herein below:

- i) Naz Pilot Secondary School, Khairpur
- ii) Government Shah Latif Boys Primary School, Khairpur
- iii) Government Shah Latif Girls Primary School, Khairpur

13. The Secretary Finance, GoS added that M/s Book Group surveyed several schools in rural Sindh and chose the above listed three (3) schools to set a prototype for future education projects. He requested the forum to approve PKR 100 million for M/s Book Group for the management of above-listed schools in the form of grant-in-aid, which may be transferred to the bank account jointly operated by the executive director of the private party and the Commissioner of Sukkur division. The Chairman asked the Commissioner to present his viewpoint on the project. The Commissioner of Sukkur division appreciated the efforts of the Education and Literacy Department, GoS and fully supported the project, and said that these schools have a historical background and it would be a good first-step towards betterment of education in rural Sindh. He further added that the grant of PKR 100 million may be increased, keeping in mind the land area and current conditions of the above-listed schools, on which, the

*Mujib Shah*

SAY NO TO CORRUPTION

No.SO/C-II/CMS/1-6/14/2017

CHIEF MINISTER'S SECRETARIAT, SINDH  
KARACHI

Karachi dated 8-February, 2018



To,

✓  
The Director General,  
Public Private Partnership Unit,  
Finance Department,  
Government of Sindh,  
Karachi.

SUBJECT.- MINUTES OF 23<sup>RD</sup> MEETING OF PUBLIC PRIVATE PARTNERSHIP(PPP) POLICY BOARD.

I am directed to enclose herewith a Note for Chief Minister Sindh dated 30-01-2018 moved by Principal Secretary to Chief Minister Sindh alongwith its enclosures duly approved by the Chief Minister Sindh on the subject noted above

2. It is requested to kindly take further necessary action in the matter as per rules and policy, please.

(SHAFIUDDIN)

DEPUTY SECRETARY (COOR-I)

CC to:-

PS to Principal Secretary to Chief Minister, Sindh, Karachi.

AGENDA NO. 3.2 (A) GREEN AND ORANGE LINE (BUS OPERATIONS SERVICES PROJECT) – APPROVAL FOR SIGNING OF CONCESSION AGREEMENT AND VGF FUNDING

13. The DG PPP Unit introduced that the "Orange and Green Line – Bus Operations Services Project" was launched under PPP Mode. In response to the RFP, two bids qualified technically. However, based on lowest present value of performance payments, a consortium led by M/S Crown Transport was selected as preferred bidder, which quoted a bid price of PKR 16.3 Billion as compared to PKR 19.1 Billion of Daewoo Pakistan. He further updated that a Letter of Award has also been issued to the preferred bidder.

14. The DG SMTA informed the forum about the existing and continuing delay in the implementation and completion of various components (e.g. infrastructure, ITS etc.) of the Overall BRTS – Orange & Green Line Project. Further, the DG SMTA cited the report of Technical Consultants [Annexure E] which highlights that completion of Green Line infrastructure component and Green Line extension is expected by October 2018 and December 2018, respectively (an approximate delay of more than 6-9 months from the timelines anticipated for implementation of the Orange and Green Line – Bus Operations Services Project). Based on such delay, the DG SMTA informed the forum that some changes are being contemplated in the Concession Agreement that primarily aim to address the consequences emanating from the afore-stated delay and that such changes are being presented before the forum. It was explained that the proposed amendments in the Concession Agreement are merely to reflect compensations on account of delay scenario.

15. Further to the department's explanation and updates on delays in the Overall BRTS – Orange & Green Line Project and the resulting consequences on the implementation of the Orange and Green Line – Bus Operations Services Project, the Advisory Consortium highlighted the following key proposed changes in the light of delayed scenario, as presented by the department:

<u>PROPOSED AMENDMENT</u>	<u>RATIONALE</u>
In the draft concession agreement, commencement of operations for the Project and the required Commencement of Operations Date was linked to 6 months from issuance of Notice of Readiness (NOR). Government of Sindh was required issue NOR to the concessionaire immediately after signing of the agreement. Given that the project may face notable delay in commencement of operations, GoS will be bound to pay to the concessionaire assured kilometer charge payments (annuity payments) from 6 months of signing of the agreement. To impart flexibility to GoS, by timing the issuance of NOR, the following amendments have been proposed:	With respect to second proposed amendment regarding structuring of three risks as presented before the board as per RFP, within six (6) months of signing of Concession Agreement, the concessionaire is required to import and procure buses. However, looking at the ground realities and the technical report outcome, it is expected that the project will face delays beyond the scheduled completion date of six (6) months from the signing date.
<u>1. Any FX devaluation</u> of the Pakistani Rupee against the currency in which the letters of credit for the import of buses is established beyond the exchange rate converted on the basis of PKR USD of 110:1 (or equivalent foreign currency) shall be funded by the Government of Sindh. The additional amounts resulting from the afore-stated devaluation will be funded by the Government of Sindh prior to the date the letter of credit is to be funded upon a call being made there under. This will be only applicable to the foreign exchange component of the capital cost of the Project relating to the cost of Buses and	As per the Draft Concession Agreement, in case the Concessionaire delivers the buses timely and is ready to commence operations on the scheduled date and if GOS has not completed the project in time due to delay in development of infrastructure component, the Government of Sindh is obligated to pay the Concessionaire the Fixed Kilometre Charge based on the Minimum Assured Bus Kilometers pro-rated for the period of delay. Financial advisor of the project informed that annuity payment of three months period's delays arrives at ~Rs. 380 million.
	The proposed amendment in the Concession Agreement, through this new structure shall the

will be as per the determination of the Independent Auditor - such determination to be based on evidence provided by the financial institution establishing the letter of credit for Bus imports. Moreover, 5% further devaluation of Pak Rupee (above exchange rate of RS/\$ 110) will impact the project cost by ~Rs. 180 million.

2. Price of Buses denominated in US Dollar or any other foreign currency, as proposed in the bid, to be increased on the basis of and indexed to US CPI (on pro rata basis) for the period that the Required Commencement of Operations Date (as now linked to Notice of Readiness) falls beyond the date falling 6 months from the Signing Date of the Concession Agreement. This additional cost shall be as per IA determination and will be funded by the Government of Sindh.

3. Direct costs of the Concessionaire (based on the heads of costs contemplated by the Base Case Financial Model) actually incurred as a result of delay in issuance of the Notice of Readiness by GOS beyond the Signing Date of the Concession Agreement due to reasons not attributable to the Concessionaire. These costs will be paid for the period commencing from the Signing Date until the date that Notice of Readiness is issued, which results in overall delay in the "Required Commencement of Operations Date". These costs will be paid as per IE and IA determination and shall be paid on the Commencement of Operations Date.

Relevant changes made to the Concession Agreement for commencement of operations of the Project in two Phases:

Phase 1 - Commencement of operations of Orange Line and Green Line to be 6 months from Notice Readiness 1

Phase 2 - Commencement of operations of Green Line Extension to be 6 months from Notice Readiness 2

The Operations Period for the entire Project is proposed to end on the day falling on date that is 10 years from Commencement of Operations for Phase 1.

Similarly, calculation of liquidated damages, conditions precedent satisfaction timing etc. and other matters have also been amended to cater for such change i.e. commencement of operations for Green Line and Orange Line to be prior to commencement of operations for Green Line Extension.

control of arrival of buses. The government may issue NOR when it believes that will the assets / project be ready.

With respect to FX risk, the DG PPP Unit briefed that Pak rupee valuation up to Rs110/1\$ should be borne by concessionaire however devaluation beyond Rs110/1\$ will be borne by GOS as it is not private sector oriented inclusion.

The chairman asked if there is possibility for partly initiating the project till completion of extension of green line. The Secretary transport informed the members that the department is working at full pace and is eyeing at completing the orange line project till June 2018. And partial services if offered will be of a great problem considering the fact that those articulated buses cannot run in the mix traffic. Whereas, the central station of green line at Nuamish may not be completed before October 2018.

The DG PPP Unit said that the best solution to this problem is that the department develops a time line and execute the project in time to avoid such escalations. He also warned that if the facilities are delayed unnecessarily or notice of readiness is issued without locking facility completion date than GOS shall be exposed to assured payment.

The legal representative of consultants explained about the proposed amendment and stated that based on the delay in execution of green line and expectation of further delay in Green Line extension, a provision of two phases has been incorporated in Concession Agreement and RFP wherein GoS shall be required to issue two NORs.

The chairman directed TMTD to synchronize timing of issuance of NORs with the completion on construction works of the infrastructure component to avoid or reduce additions in costs.

16. In addition, the forum was also informed that the following specific change has also been made to the draft CA so that it is consistent with the parameters provided in the RFP.

PROPOSED AMENDMENT	RATIONALE
Changes in fuel cost to be 100% pass through instead of 95%	<p>There is inconsistency in RFP and Concession agreement. The Concession Agreement states that increase in fuel cost shall be passed to GOS up to 95% whereas the RF states that such cost shall be a pass through item.</p> <p>In such kind of projects where fuel is a major component, it is always treated as a total pass through item, as the private partner does not have any control on its price. An example may be taken of IPPs wherein fuel is a total pass through item.</p> <p>Therefore, the proposed amendment shall rectify the inconsistency between RFP and Concession Agreement and full pass through may be allowed to the concessionaire.</p>

17. The Advisory Consortium informed the forum that the expected ridership of the project is envisaged to be 300,000/day, and accordingly the user fee is expected to be PKR 1.8 billion against annuity payments of PKR 1.5 Billion. However, the ridership is totally dependent on achieving full operations along with improvement in feeder services routes. Annuity payments for the first year of operations are estimated at PKR. 1.2 billion. Therefore, the project apparently doesn't seem to require funding from Viability Gap Fund (VGF). However, since the demand risk in the project is borne by GoS, a cushion shall be created in VGF to cover the shortfall, if there is any occurrence in the future.

18. Thereafter, the DG PPP Unit stated that the project revenues/user Fees would be deposited in an Escrow Account which would be utilized to compensate (Annuity Payments) the Bus Operations and the ITS Concessionaire. In the event of revenue shortfall, the VGF would provide the funds to cover the revenue shortfall for the life of the Project. Initially, a buffer amount of PKR 500 million may be deposited in VGF for the same purpose during the current fiscal year.

Decision:

- The PPP Policy Board approved the incorporation of the proposed amendments in the concession agreement and signing of concession agreement with the preferred bidder;*
- Creation of escrow account mechanism and the same would be replenished by the VGF in the event of Fare and Non-Fare Revenue is insufficient to meet concessionaire payments. Initial deposit of PKR 500 million in VGF in the current fiscal year is approved for the same purpose*

#### AGENDA NO.4 KARACHI THEME AND SAFARI PARK PROJECT – APPROVAL FOR INVESTOR SOLICITATION

19. The chairman directed that the project may be presented to PPP policy board after obtaining consent of Minister Local government.

Decision: *The project may be presented to Policy board again after consent of Minister Local Government department.*



TRANSPORT & MASS TRANSIT  
DEPARTMENT  
GOVERNMENT OF SINDH  
SINDH MASS TRANSIT AUTHORITY  
Summary No: 318 Dated: 26-11-2018

### SUMMARY FOR CHIEF MINISTER SINDH

**SUBJECT: BUS RAPID TRANSIT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE - BUS OPERATION AND ITS COMPONENTS.**

Realizing the importance of developing better mass transit in Karachi and to boost the economic development, the Mass transit master plan comprising of two MRT and six BRT lines are being developed under different mode of procurement. The procurement process of BRT Green Line and Abdul Sattar Edhi Line have been taken up in various modes of procurement as detailed in the subsequent paras.

2. **BRT GREEN LINE:** The Infrastructure Component of BRT Green has been taken up by GoP under the PSDP. As per the Original approved PC-1, the defined scope of the project was from Surjani Town to Gurumandir having corridor length of 22 Km with 21 stations. Moreover, after consultation with various experts and donor agencies, the scope of the project was extended up to Municipal Park with staging facility and provision for integration of other BRT Lines at Old Exhibition underground station. However, the original scope of BRT Green Line i.e. from Surjani Town to Gurumandir in being developed under Phase – I, whereas its Segment from Gurumandir to Municipal Park has been taken up in Phase – II. On Phase-I segment, the BRT running way is completed with minor works left behind, however there are considerable works impending at the BRT stations. The KIDCL claims that the Phase-I works will be completed in all respect by 15 December, 2018. In this respect SMTA had issued letters to KIDCL to intimate the date for completion of all phase-I works so as to take up the Corridor handing over/ taking over process. A recent reminder has also been sent in this respect. The BRT Green Line Infrastructure Component, after its completion, shall be handed over to GoS for managing Operation, management and maintenance.

3. **ABDUL SATTAR EDHI LINE (ORANDE LINE):** The Infrastructure Component has taken up as provincial ADP Scheme. The corridor alignment starts from Town Office Orangi to Board Office Interchange, where it integrates with BRT Green Line.

4. **BRT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE - BUS OPERATION COMPONENT:** The Public Private Partnership (the PPP) Policy Board headed by Chief Minister Sindh in its 13<sup>th</sup> Meeting held on 9<sup>th</sup> January 2015, accorded approval to market the project for Private Partner solicitation in PPP mode of procurement. Minutes of the Meeting attached as flag – A. In pursuance of the decision of the PPP Policy, the Sindh Mass Transit Authority (SMTA), Transport & Mass Transit Department (TMTD), Government of Sindh (GoS) in collaboration with the Public Private Partnership (PPP) Unit, Finance Department, GoS launched the Bus Operations component of Green and Abdul Sattar Edhi Line BRTS Project – (the Project) through



3

from the Law department with regards to the execution of the Concession Agreement during the regime of the Caretaker Government. **Flag -D**

8. Accordingly, The Law Department vetted the Draft Concession Agreement (DCA) and sent to the Transport Department on 31<sup>st</sup> July 2018 with an opinion that it cannot be signed during Interim Government Period. Recently, after formation of New Government the preferred bidder, vide letter dated 29<sup>th</sup> August 2018 requested the Preferred Bidder (M/s Crown Transport) for signing of the CA. In response, the preferred bidder confirmed their willingness to sign the concession agreement on 3<sup>rd</sup> September 2018.

9. INTEGRATED INTELLIGENT TRANSPORTATION SYSTEM (IITS) FOR BRT GREEN AND ABDUL SATTAR EDHI LINE: The IITS consultant was hired by KIDCL. The IITS consultancy service was divided into three stages. In first two stages, the consultant had to prepare feasibility study, preliminary design, BOQ, bidding documents and assistance in selection of IITS contractor and the third stage includes supervision of IITS works, perform by the contractor.

10. The Project PC-1 has also been approved by PDWP at cost of PKR 5.0 Billion. Two stage International Competitive Bidding (ICB) procurement process was initiated for IITS works. In first stage RFQ process, seven (7) bidders prequalified for package A and Two (2) for package B and notified on January 31, 2018. The Second Stage RFP would be issued to prequalified bidders after approval from procurement committee.

11. In a recent meeting held on 14<sup>th</sup> September 2018 chaired by Chief Minister Sindh, the Project was reviewed in term of its financial implications. The Commissioner Karachi/CEO KIDCL proposed that, in order to reduce the operational subsidy to an affordable level for the Government of Sindh, the Project maybe restructured along the same lines as Peshawar BRT and the Karachi BRT Red Line, which envisaged procurement of the buses by the Government and the O&M by the Private Operator. In the meeting held on 16<sup>th</sup> September 2018, under the Chairmanship of Honorable Prime Minister of Pakistan, it has been agreed that the Federal Government would procure buses and hand over the bus fleet to the GOS for managing operations of the bus operations. In this context, The TMTD initiated the summary for Chief Minister, Sindh bearing No.313 dated 17.9.2018

12. Subsequently, this office received Record Note of the Prime Minister visit to Karachi vide Prime Minister's office letter dated 12.10.2018 wherein, KIDCL was directed "to explore the option to operationalize the Green Line BRTS at the earliest. Report in this regard, should be submitted to the Federal Government within three weeks after the examining the financial regulatory and operational Aspects" (Reference para 2.1.b) Flag 'E'.

13. In pursuance to the above directives, the KIDCL presented following three (03) options in its Board of Directors meeting held on 29<sup>th</sup> September 2018:

**OPTION 1 - COMPLETION OF INFRASTRUCTURE OF GREEN LINE BRT AS PER THE SCOPE DEFINED IN PC-1**

concession agreement to be signed by bus operator, SMTA and KIDCL, which will entail following:

- i- KIDCL will be responsible for the hiring of operator with one year recurring cost
- ii- SMTA, GoS will hire station manager with fund management and fund clearing house. All the fare and non-fare revenue will be collected and housed in that escrow account.
- iii- SMTA will ensure all the pre-requisites for the smooth functioning of BRTS with cancellation/diversion of existing route permits
- iv- Non Fare revenue shall be collected through hiring of an advertising firm in a fair and transparent manner jointly by KIDCL and SMTA. Funds so generated will be deposited in the same escrow account.
- v- SMTA, GoS will take complete responsibility of subsidy if any to be paid to the bus operator
- vi- KIDCL will hand over complete control of BRTS operation to SMTA after one year of smooth operations

14. The above options were discussed in a meeting held with the Minister and Secretary, TMTD, wherein it was agreed to move a Summary for Chief Minister Sindh for taking decision on the options presented by KIDCL in their board meeting as elaborated in para 13/n. Upon approval of one of the options, the current procurement process (Bus operation of Green and Abdul Sattar Edhi Line) will be placed before the TFEC for scrapping in line with applicable laws. Moreover, the procurement process of IITS component would also be taken up in line with the approved option.

15. In view of above, The Honorable Chief Minister, Sindh may like to take decision on the preferred option as elaborated in para 13.

(IMRAN ATTA SOOMRO)

SECRETARY TO THE GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT DEPARTMENT

16. MINISTER, TRANSPORT AND MASS TRANSIT DEPARTMENT

17. CHAIRMAN, PLANNING AND DEVELOPMENT BOARD

18. SECRETARY FINANCE

19. CHIEF SECRETARY

20. CHIEF MINISTER



Secretary Finance G.O.S Summary Note

File No. D4 800 Unit/2019  
By No. 5475 Inw dt 21/01 Out dt 21/01/19

FINANCE DEPARTMENT  
GOVERNMENT OF SINDH

## SUMMARY FOR CHIEF MINISTER, SINDH

SUBJECT: BUS RAPID TRANSIT SYSTEM GREEN AND ABDUL SATTAH EDHI LINE – BUS OPERATIONS AND ITS COMPONENTS

19. Transport & Mass Transit Department (TMTD) has initiated a summary for the Honorable Chief Minister Sindh and presented options to operationalize the BRTS Green Line (the Project) at the earliest. The options have been proposed by Karachi Infrastructure Development Corporation (KIDCL) following directions of the Prime Minister of Pakistan.

20. In the Option 2 and Option 3, KIDCL is being given respectively whole and partial responsibility of implementation of bus operations and ITS components. It is pertinent to mention that KIDCL has been established by federal government to carry on the business of planning, designing, implementing, constructing and executing infrastructure development projects in Karachi and adjoining areas. For development, operations, management and maintenance of BRT / Mass Transit systems in Karachi, TMTD has incorporated a separate legal entity "TransKarachi". Attached is the summary for the Honorable Chief Minister in which TMTD obtained approval for establishment of TransKarachi (Annexure-I) in which role and mandate of Sindh Mass Transit Authority (SMTA) and TransKarachi was elaborated. Consequently, responsibility of operations and management of BRTS Green Line in Option 2 and Option 3 may be borne by TransKarachi.

21. Chief Secretary Sindh may kindly call a meeting with all the relevant stakeholders to roadmap timely implementation of the Project under the most suitable option and respective role of KIDCL, SMTA and TransKarachi in it.

  
(NAJAM AHMED SHAHID)  
Finance Secretary

22. CHIEF SECRETARY, SINDH

P. call meeting.

23. CHIEF MINISTER, SINDH

D.S. (Haff)

7/5/19

Pto →

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## SUMMARY FOR CHIEF MINISTER SINDH

SUBJECT: BUS RAPID TRANSIT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE – BUS OPERATIONS AND IITS COMPONENTS.

25. Discussed with Chief Secretary, Minister TMTD, Secretary Transport, Secretary Finance, Secretary P&D, DG PPP Unit and all concerned officers of Sindh Government on 7<sup>th</sup> March, 2019. The Transport Department Sindh shall write letter to the Secretary, Cabinet Division to the effect that:

- a. It was decided in a meeting held on 16<sup>th</sup> September, 2018 at Karachi under the chairmanship of Honourable Prime Minister of Pakistan that all the three components of BRT Green Line i.e. (1) Infrastructure Development (2) Bus Operations, including fleet procurement, O&M for the contract period, and (3) Integrated Intelligent Transportation System (IITS), shall be executed and financed by GOP.

26. Besides, the Transport Department shall also write letter to KIDCL to the effect that:

- a. The IITS component of BRT Abdul Sattar Edhi Line (Orange Line) may be taken up along with IITS component of BRT Green Line under a single contract by KIDCL/GOP. However, the GOS shall pay the cost component of the BRT Abdul Sattar Edhi Line (ASEL) IITS. This arrangement will ensure uniformity of standards and integration.

27. The Transport Department shall scrap the earlier procurement process of Bus Operations Component for BRT Green and Abdul Sattar Edhi Line (ASEL), and initiate fresh procurement process of Bus Operation for ASEL in Public Private Partnership Mode.

28. The matter of Mezzanine Floor at Numaish underground station shall be consulted by Transport Department with Asian Development Bank regarding its operational and commercial viability along with O&M streams in terms of its sustainability then also resolve it with KIDCL for its need and viability.

  
12/3/19  
CHIEF MINISTER SINDH

29. CHIEF SECRETARY SINDH

  
Secretary Transport 13/3/19.

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SUMMARY SECTION  
C.M. SECRETARY NO. 758  
DATE: 12.03.2019

P.U. draft for para 26(a) above.  
P.U. agenda item for PPP Policy Board meeting  
meeting in next week for approval  
(Cm 1m 8-10)



Off No: 021-99111917  
Fax No: 021-9911298

No. SMTA/BUSOPS/OL-GL/1385  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT DEPARTMENT

Karachi, Dated: 5th September 2019.

To

The Chief Executive Officer,  
Sindh Infrastructure Development Company Limited (the SIDCL),  
Cabinet Division,  
Government of Pakistan

Subject: BRTS – ABDUL SATTAR EDHI (ORANGE) LINE PROJECT

This is with reference to the meeting held on 4th September 2019 under the Chairmanship of Secretary Transport & Mass Transit Department, GoS wherein it was discussed that the Orange Line shall be integrated with Green Line BRT. A meeting was held with honorable Chief Minister, Sindh on 16th July 2019, in that meeting it was decided that Orange Line Operations extended up to Nagan Chowranghi to make it more useful for its users without needing them to transfer at Board Office. It was also desired to build provision in infrastructure at Board office to extend BRT Orange Operations towards Numaish. Our Consultant has developed an Infrastructure Integration Concept Plan attached Annexure 1 for your review in order to improve the ridership and meet economies of scale.

In addition to this Government of Sindh would like to know if SIDCL may procure fleet of Orange Line BRT with ITB. Also the complete Operation & Maintenance (O&M) may be outsourced to SIDCL whereas the GoS shall provide the funds to SIDCL for prospective bus procurement and operations.

In this regard, the viewpoint of SIDCL may require in order to proceed with the project at the earliest.

MANAGING DIRECTOR  
SINDH MASS TRANSIT AUTHORITY

Copy is forwarded to:

1. P.S to Minister, Transport and Mass Transit Department, GoS
2. P.S Chairperson Planning & Development Board, Planning & Development Department, GoS
3. P.S to Secretary, Transport & Mass Transit Department, GoS

in 1/10, please  
Mr. S. S. S. S.  
for comment



SINDH INFRASTRUCTURE DEVELOPMENT COMPANY LTD.  
CABINET DIVISION  
GOVERNMENT OF PAKISTAN  
6<sup>th</sup> Floor, Extension Block, Bahria Complex IV, Gizri, Karachi  
Tel: 021-35155101, Fax: 021-35155102  
company.secretary@sidcl.com.pk; www.sidcl.com.pk

No. SIDCL(GLBRTS)/GM//2020/7024  
Dated: 30<sup>th</sup> April 2020

To

1. Ar. Samar Ali Khan, Independent Director/ Chairman SIDCL.
2. Secretary, Ministry of Communications /Member BOD SIDCL.
3. Secretary, Ministry of Planning/Member BOD SIDCL.
4. Secretary, Ministry of Finance/Member BOD SIDCL.
5. Chief Secretary, Government of Sindh/Member BOD SIDCL.
6. Chairman, Planning and Development Board, Govt of Sindh/Member BOD SIDCL.
7. Lt. General @ Shahid Niaz, Independent Director/Member BOD SIDCL.
8. Chief Executive Officer, SIDCL/Member BOD SIDCL.
9. Professor Sarosh Hashmat Lodhi, VC NED University/Member BOD SIDCL.
10. Additional Secretary, Cabinet Division/Member BOD SIDCL.
11. Commissioner, Karachi Division/Member BOD SIDCL.
12. Ar. Arif Hassan, Independent Director/Member BOD SIDCL.
13. Professor Noman Ahmed, Dean Architecture Dept, NED University/Member BOD SIDCL.
14. Mr. Adnan Asdar, Independent Director/Member BOD SIDCL.
15. Brig. Qazi Nasir Mehmood, 5 Corps/Member BOD SIDCL.
16. Dr. Saif-ur-Rehman, Municipal Commissioner, KMC/Member BOD SIDCL.

Secy Transport

Chief Commr

**SUBJECT: MINUTES OF 21<sup>st</sup> MEETING OF BOARD OF DIRECTORS OF SIDCL HELD ON 22<sup>nd</sup> APRIL 2020 AT 10:30 A.M. IN THE CABINET'S COMMITTEE ROOM, 7<sup>TH</sup> FLOOR, SINDH SECRETARIAT, KARACHI.**

I am directed to enclose herewith a copy of minutes of the 21<sup>st</sup> meeting of Board of Directors of Sindh Infrastructure Development Company Limited was held on 22<sup>nd</sup> April 2020 at 10:30 AM in the Cabinet Committee room, 7<sup>th</sup> Floor, Sindh, Sindh Secretariat Building No. 1, Karachi, duly approved by Chairman SIDCL.

2. Any observation/objection in respect of the minutes may kindly be communicated to the undersigned as per provision of rule-6(4) of the Public Sector Companies (Corporate Governance) Rules, 2013.

Syed Ahmed Fawad  
Company Secretary

Copy to:

- General Manager (F&A) /CFO-SIDCL, Karachi.
- General Manager (Engineering) /Chief Engineer -SIDCL, Karachi.
- Section Officer (Dev-I), Cabinet Division, Islamabad.
- Master File.

**Decision No. 4**

BOD tasked GM(F&A)/CFO SIDCL to liaise with the Chairman P&D Board and T&MT Department, and got the Agreement signed at the earliest.

**AGENDA No. 2**

**GREEN LINE BRTS' OPERATIONS  
(DELIBERATION ON FLOATING OF RFPs  
AND CONSIDERATION OF A COUPLE OF  
PROPOSALS FOR LIMITED OPERATIONS).**

a. The PC-I of the project was cleared by CDWP and ECNEC forums on 3<sup>rd</sup> March 2020 and 26<sup>th</sup> March 2020 respectively. Draft RFPs for Bus Procurement and IITS with contract agreements, based on Technical Committee and BOD approvals, are ready. The bidding process will be Open Competitive Bidding (ICB) with Single Stage Two Envelope with response time as prescribed for international procurements.

Soft copy of Draft-Final RFPs is attached as Annexure-E and attached CD/email for consideration and approval of the Board.

**Deliberations:**

**RFPs of Green Line Operations:**

GM (F&A) / CFO-SIDCL apprised the Board that RFPs have been amended, refined and updated in light of the continuous input of the Directors and Technical Committee.

Mr. Mubashir of E&Y-Exponent consortium briefed the Board on the salient features of RFPs focusing on the eligibility criteria and relative marking scheme.

Mr. Adnan Asdar opined that experience and eligibility of the prospective bidders should be kept in a way to achieve a fine balance in quality, performance and delivery in time.

CEO SIDCL opined that we need to achieve a fine balance regarding quality of product alongwith competitive bids.

Mr. Adnan Asdar opined that aim of SIDCL should be to hire manufacturers instead of companies engaged in assembling and/or Middlemen. Consideration of this may be given in eligibility criteria.

**Decision No. 5**

The BOD acknowledged the due diligence made in formulation of both RFPs, and acknowledged that the RFPs shall be floated at the earliest upon issuance of Administrative Approval by Planning Commission. However, this is subject to vetting of the Evaluation Criteria by the Technical Committee of the BOD, to be scheduled within a week's time. Once the Evaluation Criteria is fine-tuned by the Technical Committee, RFPs/Tenders be floated accordingly.

**Utilization of the Corridor:**

GM (F&A) / CFO-SIDCL apprised the Board that early utilization of the Green Line Corridor

b. Governor Sindh shared that a couple of unsolicited proposals have been submitted to him for utilization of the corridor / limited

operations for the interim period. Though verbal and non-binding informal proposals have been discussed at Governor House, yet SIDCL was not submitted any formal proposal for consideration. Besides, unsolicited proposals' provision is neither under Public Procurement Rules, 2004 nor in Federal PPP Act. Informal proposals' salient features are as under:

- Limited operations of buses with 12m or 18m buses
- A mix of old and new buses will be used. The buses do not comply with the requisite specs for the corridor
- Limited ITS will be used – Hand handle devices
- Collection of fare, handling of stations and maintenance of depot will be done by the operator
- The contract is proposed to be for 10 years.

The matter came under discussion before the Hon'ble Prime Minister's review meeting on 13<sup>th</sup> March, 2020 in Islamabad. The forum directed SIDCL to place the matter before the BOD for deliberation and submit report within 30 days.

BOD is requested to deliberate upon the proposal in principle. Once SIDCL management is authorized, GoS will be consulted and the prospective vendors will be invited for a formal proposal. Subject to adherence to the prescribed procurement procedures or a PPP framework, a formal proposal will be placed before the BOD for consideration.

The BOD may like to authorize/nominate 2-3 Directors and/or Procurement Committee to look into the matter and guide the management accordingly.

was discussed at various fora. The same was discussed before the Prime Minister's Review Meeting dated 13.3.2020, wherein BOD SIDCL was advised to look into this and submit its recommendations.

M/s. E&Y-Exponent-HMCO consortium explained that due to the design of the corridor, specialised buses for corridor are recommended. Additionally, the Board must consider issues related to fare collection, ITS and the age of fleet of buses. He further elaborated that proposed operations of Green Line may be affected (especially related to installation of ITS), in case an operator is allowed to run operations. The consultants strongly recommended that due to various complications, SIDCL should proceed with the approved arrangements. The half-baked unsolicited proposals can neither be entertained under the law, nor the informal proposals are of serious nature.

Prof. Dr. Noman Ahmed enquired about the approximate time the corridor is expected to remain unutilized. The consultants replied that as AA is issued and procurements are scheduled, it would take about 40-45 weeks to operationalize the corridor.

CEO SIDCL remarked that matter of utilization of the corridor was discussed in review meeting under chairmanship of Prime Minister, in which it was decided that the Board may be authorised to examine the proposals of utilization of the corridor and convey its recommendations to the government. Presently, the Board has two options at the table i.e. it may examine interim arrangements for utilization of the corridor or it may consent to procurement as per PC-I exclusively. He explained that the informal proposals have been found incomplete and non-serious, and were not submitted formally. In some proposals, old buses were being offered for corridor, which do not meet specifications of the corridor. He briefed the Board that interim proposals will be associated with conditions for continuation of their contracts for a minimum duration of 10 years, which is beyond the mandate of SIDCL's operation tenure. Besides, the CEO apprised that legal mandate to receive and process Unsolicited



Proposals under Procurement framework is also not there.

Professor Dr. Sarosh Lodhi remarked that since there are no serious offers yet, the SIDCL may commence its procurement as approved in the PC-I of Green Line Operations. He, however, cautioned that the Procurement process will not finish before August 2020. Meanwhile, if there are any serious proposals under the law, the Board may deliberate its terms in due course.

Secretary Planning Division remarked that the Board must consider the fact that procurement rules do not allow un-solicited proposals, the same will be invited through NIT. He suggested SIDCL management to ensure that Facilitation and Implementation Agreement is signed at earliest, since no Administrative Approval Order in respect of Green Line BRTS project will be issued without meeting that condition.

Additional Secretary Cabinet Division endorsed that SIDCL must focus on regular procurement as per PC-I of the project, instead of focusing on unsolicited proposals. This might derail the regular process and invite unwarranted irregularities from the approved arrangement.

Lt. General (R) Shahid Niaz endorsed the stance of SIDCL to review the proposals once the BOD has authorized it. He highlighted that this will be a complete deviation from the PC-1 already approved by the ECNEC, whereby SIDCL is required to procure the Busses and conclude other related service contracts. The RFP's for the intended purpose have already been finalized after lot of deliberations/effort and these are ready to be floated. However, in view of the directions of the Federal Government, the course suggested by SIDCL may be approved by the BOD to arrive at a conclusive way forward.

Mr. Adnan Asdar endorsed the proposal of Lt. General (R) Shahid Niaz and opined that still a number of some civil works are to be

undertaken across the corridor, therefore interim utilization proposal may be expunged.

Chairman SIDCL remarked that there is a consensus on few things i.e. the laws/rules need to be followed; due to on-going civil works relief to public through interim measures cannot be extended; and the procurement under PC-I of Green Line BRTS may be commenced immediately.

#### Decision No. 6

The BOD acknowledged the concerns of the stakeholders for early operationalization of the Corridor. However, owing to legal, technical and operational prerequisites, the deviation from the approved arrangement cannot be made. Accordingly, the BOD directed the management to proceed ahead with the ECNEC's approval and initiate procurement process upon issuance of AA. The Cabinet Division may be submitted with the SIDCL's recommendation for onward submission to the Prime Minister's Office.

#### c. Orange Line Operations

##### Orange Line Operations:

CEO SIDCL apprised the Board that GoS has requested SIDCL for undertaking Orange Line Operations i.e. procurement of buses and ITS for Orange Line and its operations vide formal letter in September, 2019. SIDCL considered the proposal in its BOD and Technical Committee, and subject to financial arrangements and technical aspects, GoS will be the beneficiary due to economy of scales involved.

CEO further apprised the BOD that GoS incorporated the mandate of operations of Orange Line in the Draft Facilitation Agreement of Green Line. However, the BOD and Cabinet Division directed to have a separate arrangement with GoS on Orange Line, subject to technical and financial aspects. In compliance, reference of Orange Line in the Facilitation Agreement of Green Line was removed.

GM (F&A)/CFO-SIDCL apprised the Board that in light of the recommendations of last meeting of Technical Committee, the GoS through Transport & Mass Transit department was requested to provide assurances with respect to escrow and prior financial arrangements for Orange Line Fleet & IITS; nomination of duly authorised officers of T&MT for joint procurement of buses & IITS, and a separate Facilitation & Implementation Agreement for Orange Line. Formal letters have been written to T&MT Department in October-November, 2019 and reminder in April, 2020. As SIDCL is geared-up to launch its Fleet and IITS' tenders, GoS needs to expedite their response.

Chairman P&D Board assured the Board that he will convene joint meeting of T&MT Department and SIDCL, and personally expedite assurances from GoS.

Mr. Ashraf Lakho of Transport & Mass Transit Department acknowledged the receipt of draft of facilitation agreement and the same is being submitted for approval of Chief Minister Sindh, as the earlier draft was also approved by him. He informed the Board that Chief Minister Sindh had previously enquired about integration of Orange and Green Lines.

GM (F&A)/CFO-SIDCL informed that two options were discussed in last meeting of Technical committee i.e. Passenger transfer at KDA or through priority signal Orange Line may operate till Nagin.

Mr. Mubashir of E&Y-Exponent consortium suggested that priority signal is better option for reintegration, since it will allow Orange Line to even expand its operations till Saddar.

Chairman SIDCL proposed that integration of Orange and Green Lines may be discussed by Technical Committee. CEO SIDCL also endorsed the proposal.

Mr. Adnan Asdar proposed that Government of Sindh may take steps to extend the Orange Line Corridor upto Orangi (4-5 additional KMs) otherwise under present scheme

Orange Line will serve less than 50% ridership.

Chairman P&D Board remarked that the proposal will be considered by GoS under new scheme i.e. Phase-II of Orange Line.

**Decision No. 7**

Upon assurance by the Chief Secretary and the Chairman P&D GoS, BOD authorized the Technical Committee of the BOD, to be convened within a week's time, to examine the technical and financial arrangements in respects of Orange Line to be undertaken by SIDCL. Once cleared by the Technical Committee, BOD authorised the management to proceed with the joint procurement and operations of Green and Orange Lines for interoperability and economies of scale. However, SIDCL shall bear no financial and other liability for undertaking the Orange Line Operations.

**Agenda No. 3**

**DELIBERATIONS ON WAY FORWARD FOR  
SIDCL - VISION AND REQUISITE  
STRUCTURAL CHANGES.**

The Strategic Committee meeting in its 1<sup>st</sup> meeting on 11<sup>th</sup> January 2020 (Annexure-F) submitted its recommendations. The BOD in its 20<sup>th</sup> session dated 17<sup>th</sup> January 2020 deliberated upon the recommendations and decided as under:

In compliance to the above, a detailed meeting was held with the Finance Division on 29<sup>th</sup> January 2020 and accordingly a comprehensive organogram along with draft SNE were prepared (Annexure-G & H). It was agreed with the Finance Division that subject to approval of BOD and Cabinet Division, SIDCL will be given a Single Line Grant and reflected in the budget books of Cabinet Division. The Development Grant will also be reflected for SIDCL w.e.f. FY 2020-21 to conceive projects for Sindh including Karachi.

**Deliberations:**

GM (F&A) / CFO-SIDCL apprised the Board that recommendations of Strategic Committee and the Board have been submitted to Cabinet Division and Finance Division. In view of these deliberations, SIDCL has firmed up proposal of restructuring of SIDCL as outlined in the new Organogram and its associated expenditure outlined in the proposed SNE. He intimated that the restructuring (Proposed Organogram and draft SNE) needs to be approved by the Board, so that the same may be submitted to Cabinet Division and Finance Division for further necessary action.

GM (F&A) / CFO-SIDCL further explained that new post of Chief Operating Officer has been conceived to look-after all operational matters of company and that functions of CFO and COO are being separated. He informed that in light of the objections of auditors and under the Companies Act, the position of Chief Internal Auditor has also created.

Lt. General (R) Shahid Niaz recommended that positions of GM (Engineering) and the Internal Audit Officer should be placed under the COO and they should not be reporting directly to the CEO, since the COO is required

**CONTRACT FOR  
ENGINEERING CONSULTANCY SERVICE**  
(Lump Sum for Design Stage i.e. Stage I & II)

between



**KARACHI INFRASTRUCTURE DEVELOPMENT  
COMPANY LTD.  
MINISTRY OF COMMUNICATIONS  
GOVERNMENT OF PAKISTAN**

and

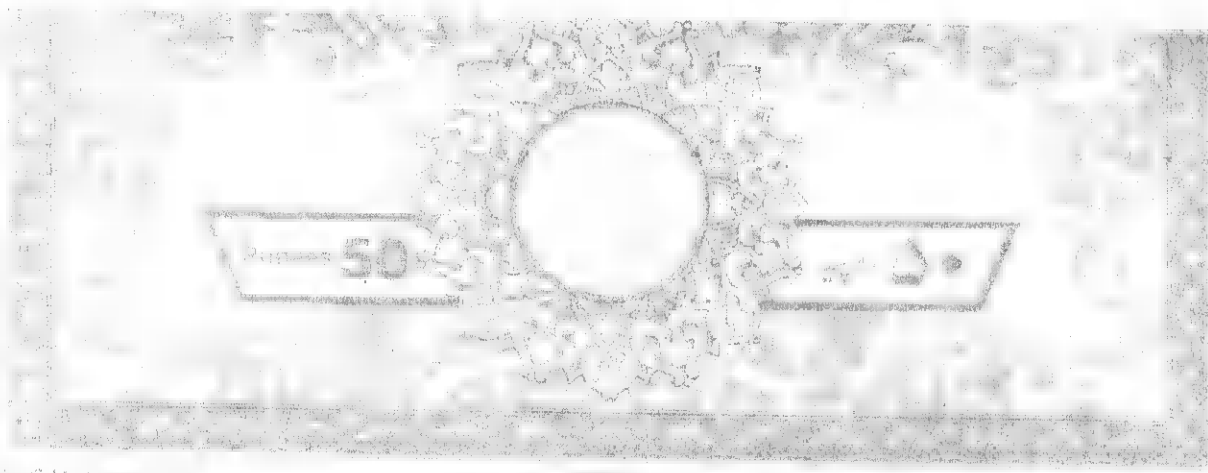
**JOINT VENTURE OF  
BLIC GMBH,  
EA CONSULTING (PVT) LTD  
AND  
DATA COMMUNICATION AND CONTROL (PVT) LTD**

for

**FEASIBILITY & TECHNICAL STUDY  
AND PRELIMINARY DESIGN FOR  
INTEGRATED INTELLIGENT TRANSPORT SYSTEM (IITS)  
FOR THE KARACHI MASS TRANSIT PLAN  
(STAGE I & II)**

*June 2016*

ITS  
Feasibility  
Study  
from  
NIAZ st  
to be taken



033166

033166

### AMENDMENT NO.1

TO THE CONTRACT BETWEEN KARACHI INFRASTRUCTURE DEVELOPMENT COMPANY LTD.

(KIDCL), MINISTRY OF COMMUNICATION, GOVT. OF PAKISTAN

AND JOINT VENTURE OF

BLIC GmbH + EA CONSULTING (PVT.) LTD + DATA COMMUNICATION & CONTROL PVT. LTD.

DATED.....

A Contract was signed on October 17, 2016 between Karachi Infrastructure Development Company Ltd (herein after called KIDCL), Ministry Of Communication, Govt. Of Pakistan and Joint Venture of BLIC GmbH + EA Consulting (Pvt ) Ltd + Data Communication & Control Pvt. Ltd. (hereinafter called the JV) for Feasibility & Technical Study And Preliminary Design For Integrated Intelligent Transport System (IITS) For The Karachi Mass Transit Plan (Stage I & II).

Whereas the Payment Schedule given under para No.8 of the Minutes of the Contract Negotiation Meetings (Appendix H of the Contract) for the Tasks in the above mentioned Stages I & II of the works erroneously shows a 15% payment against the Task No 7 of Stage III, both parties of the Contract have hereby agreed to affect the following amendment to the aforementioned Contract to rectify this error in the Payment Schedule for Tasks in Stages I & II:

As the payment for Task 7 of Stage III would be drawn from the Contract amount for the Stage III, the amount of 15% shown against the Task 7 from the Contract Value of Rs.129 64 million (Net Value before taxation Rs.110 305 million) for Stages I & II activities shall be distributed on the tasks 1- 6 of Stages I & II, as shown hereunder based on the net contract value before taxation:

BLIC GmbH  
Fritz-Vornfelde-Straße 6  
40547 Düsseldorf

KARACHI INFRASTRUCTURE DEVELOPMENT COMPANY LTD.  
MINISTRY OF COMMUNICATIONS GOVERNMENT OF PAKISTAN

Witness

Signature

Signature

Name NISAR AHMED SARIO.

Name SUALEH AHMED FARUQUI.

Title CHIEF ENGINEER.

Title CEO, KIDCL.

(Seal)

For and on behalf of

JOINT VENTURE OF  
BLIC GMBH, EA CONSULTING (PVT) LTD AND  
DATA COMMUNICATION AND CONTROL (PVT) LTD

Name of Member No. 1

BLIC GmbH Fritz-Vomfelde-Strasse 6, 40547 Dusseldorf, Germany

Witness

Signature

Signature

Name Ulrich Lüdke

Title Managing Director, POA  
**BLIC** Fritz-Vomfelde-Strasse 6  
40547 Düsseldorf

Name Philip Bartz

Title General Manager, POA  
**BLIC** Fritz-Vomfelde-Strasse 6  
40547 Düsseldorf

Name of Member No. 2

EA Consulting Pvt. Ltd. AL-9, 15th Lane, Khyban-e-Hilal, Phase-VII, DHA, Karachi,  
Pakistan

Witness

Signature

Signature

Name S. M. TAYYAB

Title Chief Engineer (Traffic)

Name TANVEER AHMED

Title DIRECTOR PROTECTS

Name of Member No. 3

Data Communication & Control (Pvt.) Ltd., 409-410 Clifton Centre, Block 5, Clifton,  
Karachi.

Witness

Signature

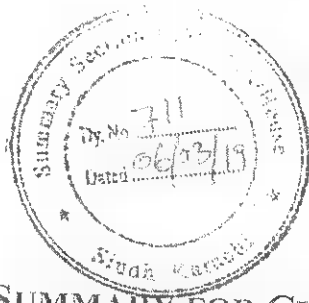
Signature

Name SABID AHMED

Title Business Development Manager

Name SAMIR HOODBHOY

Title MD



TRANSPORT & MASS TRANSIT  
DEPARTMENT  
GOVERNMENT OF SINDH  
SINDH MASS TRANSIT AUTHORITY  
Summary No: 318 Dated: 06-11-2018

### SUMMARY FOR CHIEF MINISTER SINDH

**SUBJECT: BUS RAPID TRANSIT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE - BUS OPERATION AND ITS COMPONENTS.**

Realizing the importance of developing better mass transit in Karachi and to boost the economic development, the Mass transit master plan comprising of two MRT and six BRT lines are being developed under different mode of procurement. The procurement process of BRT Green Line and Abdul Sattar Edhi Line have been taken up in various modes of procurement as detailed in the subsequent paras.

2. **BRT GREEN LINE:** The Infrastructure Component of BRT Green has been taken up by GoP under the PSDP. As per the Original approved PC-1, the defined scope of the project was from Surjani Town to Gurumandir having corridor length of 22 Km with 21 stations. Moreover, after consultation with various experts and donor agencies, the scope of the project was extended up to Municipal Park with staging facility and provision for integration of other BRT Lines at Old Exhibition underground station. However, the original scope of BRT Green Line i.e. from Surjani Town to Gurumandir in being developed under Phase – I, whereas its Segment from Gurumandir to Municipal Park has been taken up in Phase – II. On Phase-1 segment, the BRT running way is completed with minor works left behind, however there are considerable works impending at the BRT stations. The KIDCL claims that the Phase-1 works will be completed in all respect by 15 December, 2018. In this respect SMTA had issued letters to KIDCL to intimate the date for completion of all phase-1 works so as to take up the Corridor handing over/ taking over process. A recent reminder has also been sent in this respect. The BRT Green Line Infrastructure Component, after its completion, shall be handed over to GoS for managing Operation, management and maintenance.

3. **ABDUL SATTAR EDHI LINE (ORANDE LINE):** The Infrastructure Component has taken up as provincial ADP Scheme. The corridor alignment starts from Town Office Orangi to Board Office Interchange, where it integrates with BRT Green Line.

4. **BRT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE - BUS OPERATION COMPONENT:** The Public Private Partnership (the PPP) Policy Board headed by Chief Minister Sindh in its 13<sup>th</sup> Meeting held on 9<sup>th</sup> January 2015, accorded approval to market the project for Private Partner solicitation in PPP mode of procurement. Minutes of the Meeting attached as flag – A. In pursuance of the decision of the PPP Policy, the Sindh Mass Transit Authority (SMTA), Transport & Mass Transit Department (TMTD), Government of Sindh (GoS) in collaboration with the Public Private Partnership (PPP) Unit, Finance Department, GoS launched the Bus Operations component of Green and Abdul Sattar Edhi Line BRTS Project – (the Project) through



3

from the Law department with regards to the execution of the Concession Agreement during the regime of the Caretaker Government. **Flag -D**

8. Accordingly, The Law Department vetted the Draft Concession Agreement (DCA) and sent to the Transport Department on 31<sup>st</sup> July 2018 with an opinion that it cannot be signed during Interim Government Period. Recently, after formation of New Government the preferred bidder, vide letter dated 29<sup>th</sup> August 2018 requested the Preferred Bidder (M/s Crown Transport) for signing of the CA. In response, the preferred bidder confirmed their willingness to sign the concession agreement on 3<sup>rd</sup> September 2018.

9. INTEGRATED INTELLIGENT TRANSPORTATION SYSTEM (IITS) FOR BRT GREEN AND ABDUL SATTAR EDHI LINE: The IITS consultant was hired by KIDCL. The IITS consultancy service was divided into three stages. In first two stages, the consultant had to prepare feasibility study, preliminary design, BOQ, bidding documents and assistance in selection of IITS contractor and the third stage includes supervision of IITS works, perform by the contractor.

10. The Project PC-1 has also been approved by PDWP at cost of PKR 5.0 Billion. Two stage International Competitive Bidding (ICB) procurement process was initiated for IITS works. In first stage RFQ process, seven (7) bidders prequalified for package A and Two (2) for package B and notified on January 31, 2018. The Second Stage RFP would be issued to prequalified bidders after approval from procurement committee.

11. In a recent meeting held on 14<sup>th</sup> September 2018 chaired by Chief Minister Sindh, the Project was reviewed in term of its financial implications. The Commissioner Karachi/CEO KIDCL proposed that, in order to reduce the operational subsidy to an affordable level for the Government of Sindh, the Project may be restructured along the same lines as Peshawar BRT and the Karachi BRT Red Line, which envisaged procurement of the buses by the Government and the O&M by the Private Operator. In the meeting held on 16<sup>th</sup> September 2018, under the Chairmanship of Honorable Prime Minister of Pakistan, it has been agreed that the Federal Government would procure buses and hand over the bus fleet to the GOS for managing operations of the bus operations. In this context, The TMTD initiated the summary for Chief Minister, Sindh bearing No.313 dated 17.9.2018

12. Subsequently, this office received Record Note of the Prime Minister visit to Karachi vide Prime Minister's office letter dated 12.10.2018 wherein, KIDCL was directed "to explore the option to operationalize the Green Line BRTS at the earliest. Report in this regard, should be submitted to the Federal Government within three weeks after the examining the financial regulatory and operational Aspects" (Reference para 2.1.b) Flag 'E'.

13. In pursuance to the above directives, the KIDCL presented following three (03) options in its Board of Directors meeting held on 29<sup>th</sup> September 2018:

OPTION 1 - COMPLETION OF INFRASTRUCTURE OF GREEN LINE BRT AS PER THE SCOPE DEFINED IN PC-1

5

concession agreement to be signed by bus operator, SMTA and KIDCL, which will entail following:

- i- KIDCL will be responsible for the hiring of operator with one year recurring cost
- ii- SMTA, GoS will hire station manager with fund management and fund clearing house. All the fare and non-fare revenue will be collected and housed in that escrow account.
- iii- SMTA will ensure all the pre-requisites for the smooth functioning of BRTS with cancellation/diversion of existing route permits
- iv- Non Fare revenue shall be collected through hiring of an advertising firm in a fair and transparent manner jointly by KIDCL and SMTA. Funds so generated will be deposited in the same escrow account.
- v- SMTA, GoS will take complete responsibility of subsidy if any to be paid to the bus operator
- vi- KIDCL will hand over complete control of BRTS operation to SMTA after one year of smooth operations

14. The above options were discussed in a meeting held with the Minister and Secretary, TMTD, wherein it was agreed to move a Summary for Chief Minister Sindh for taking decision on the options presented by KIDCL in their board meeting as elaborated in para 13/n. Upon approval of one of the options, the current procurement process (Bus operation of Green and Abdul Sattar Edhi Line) will be placed before the TFEC for scrapping in line with applicable laws. Moreover, the procurement process of IITS component would also be taken up in line with the approved option.

15. In view of above, The Honorable Chief Minister, Sindh may like to take decision on the preferred option as elaborated in para 13.

16. MINISTER, TRANSPORT AND MASS TRANSIT DEPARTMENT

17. CHAIRMAN, PLANNING AND DEVELOPMENT BOARD

18. SECRETARY FINANCE

19. CHIEF SECRETARY

20. CHIEF MINISTER

(IMRAN ATTA SOOMRO)  
SECRETARY TO THE GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT DEPARTMENT

3/12/2018



Secretary Finance G.O.S Summary / Note

File No. D4 PPP Unit/2019  
Cv. No. 5472 Inw. dt: 21/01/19 Out: dt: 31/01/19

FINANCE DEPARTMENT  
GOVERNMENT OF SINDH

## SUMMARY FOR CHIEF MINISTER, SINDH

SUBJECT: BUS RAPID TRANSIT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE – BUS OPERATIONS AND ITS COMPONENTS

19. Transport & Mass Transit Department (TMTD) has initiated a summary for the honorable Chief Minister Sindh and presented options to operationalize the BRTS Green Line (the Project) at the earliest. The options have been proposed by Karachi Infrastructure Development Corporation (KIDCL) following directions of the Prime Minister of Pakistan.

20. In the Option 2 and Option 3, KIDCL is being given respectively whole and partial responsibility of implementation of bus operations and ITS components. It is pertinent to mention that KIDCL has been established by federal government to carry on the business of planning, designing, implementing, constructing and executing infrastructure development projects in Karachi and adjoining areas. For development, operations, management and maintenance of BRT / Mass Transit systems in Karachi, TMTD has incorporated a separate legal entity "TransKarachi". Attached is the summary for the Honorable Chief Minister in which TMTD obtained approval for establishment of TransKarachi (**Annexure-I**) in which role and mandate of Sindh Mass Transit Authority (SMTA) and TransKarachi was elaborated. Consequently, responsibility of operations and management of BRTS Green Line in Option 2 and Option 3 may be borne by TransKarachi.

21. Chief Secretary Sindh may kindly call a meeting with all the relevant stakeholders to roadmap timely implementation of the Project under the most suitable option and respective role of KIDCL, SMTA and TransKarachi in it.

  
(NAJAM AHMED SHAH)  
Finance Secretary

22. CHIEF SECRETARY, SINDH

P. call meeting.

23. CHIEF MINISTER, SINDH

D.S (Staff)

7/2/19

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## SUMMARY FOR CHIEF MINISTER SINDH

SUBJECT: BUS RAPID TRANSIT SYSTEM GREEN AND ABDUL SATTAR EDHI LINE – BUS OPERATIONS AND IITS COMPONENTS.

25. Discussed with Chief Secretary, Minister TMTD, Secretary Transport, Secretary Finance, Secretary P&D, DG PPP Unit and all concerned officers of Sindh Government on 7<sup>th</sup> March, 2019. The Transport Department Sindh shall write letter to the Secretary, Cabinet Division to the effect that:


- a. It was decided in a meeting held on 16<sup>th</sup> September, 2018 at Karachi under the chairmanship of Honourable Prime Minister of Pakistan that all the three components of BRT Green Line i.e. (1) Infrastructure Development (2) Bus Operations, including fleet procurement, O&M for the contract period, and (3) Integrated Intelligent Transportation System (IITS), shall be executed and financed by GOP.

26. Besides, the Transport Department shall also write letter to KIDCL to the effect that:

- a. The IITS component of BRT Abdul Sattar Edhi Line (Orange Line) may be taken up along with IITS component of BRT Green Line under a single contract by KIDCL/GOP. However, the GOS shall pay the cost component of the BRT Abdul Sattar Edhi Line (ASEL) IITS. This arrangement will ensure uniformity of standards and integration.

27. The Transport Department shall scrap the earlier procurement process of Bus Operations Component for BRT Green and Abdul Sattar Edhi Line (ASEL), and initiate fresh procurement process of Bus Operation for ASEL in Public Private Partnership Mode.

28. The matter of Mezzanine Floor at Numaish underground station shall be consulted by Transport Department with Asian Development Bank regarding its operational and commercial viability along with O&M streams in terms of its sustainability then also resolve it with KIDCL for its need and viability.

  
12/3/19

CHIEF MINISTER SINDH

29. CHIEF SECRETARY SINDH

  
Secretary Transport 13/3/19.

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P.U draft for para 2.6(a) above.  
P.U agenda item for PPP Policy Board meeting  
meeting in next week for approval  
(Cmt. 1 m 8-10)

SUMMARY SECTION  
C.M.S. OUTWARD NO. 759  
DATE: 12.03.2019



## Transport & Mass Transit Department Government of Sindh

M. Akhtar Ghori  
Secretary

No.TMTD/GOS(GREEN LINE)/2019  
Karachi, the 11<sup>th</sup> March, 2019

To,

The Secretary,  
Cabinet Division  
Government of Pakistan  
Islamabad.


**Subject: Bus Rapid Transit System Green Line Project**

This is with reference to the meeting of Prime Minister of Pakistan with Chief Minister Sindh, during Prime Minister's visit to Karachi on 16<sup>th</sup> September 2018, wherein the potential and existing mega projects in Karachi were discussed.

2. During the above-mentioned meeting, it was decided by the Prime Minister to synchronize the overall project in a single package and all the three components of BRT Green Line i.e. (1) Infrastructure development (which is already undertaking by KIDCL) (2) Bus Operations, including fleet procurement and O&M for the contract period, and (3) Integrated Intelligent Transportation System (IITS), including all ancillary activities, shall be executed and financed by the Government of Pakistan.

3. In consideration to above, Government of Sindh has already cancelled the procurement process of Bus Operations and IITS with the understanding that the Government of Pakistan will undertake the procurement of all three components of Green Line. It is requested to kindly communicate the tenure of the Bus Operations, IITS and their O&M component which the Government of Pakistan will undertake in the project.

4. This will help Government of Sindh to finalize its strategy for other BRTS Lines.

  
(Muhammad Akhtar Ghori) 11/03/19  
Secretary to Government of Sindh  
Transport & Mass Transit Department

Copy to :

1. The Minister, Transport & Mass Transit, Government of Sindh, Karachi.
2. The Chief Secretary, Government of Sindh, Karachi.
3. Chairman, Planning & Development Board, Govt. of Sindh, Karachi.
4. Principal Secretary to Chief Minister Sindh, Karachi.
5. Secretary to Government of Sindh, Finance Department, Karachi.
6. Chief Executive Officer, KIDCL, Karachi.
7. Director, PPP Unit, Finance Department, Govt. of Sindh, Karachi.
8. The Managing Director, SMTA, Karachi.

Room No.302, 2nd Floor, Tughlaq House,  
Sindh Secretariat # 2, Shahra-e-Kamal Ata Turk, Karachi, Pakistan  
Tel: +92-21-99211017 Fax: +92-21-99211298



NO.TMTD/GOS/(GREEN/ASE LINE)/IITS/2019  
GOVERNMENT OF SINDH  
TRANSPORT & MASS TRANSIT  
DEPARTMENT

Karachi, dated 15<sup>th</sup> March, 2019

To,

The Chief Executive Officer,  
Karachi Infrastructure Development Company Limited (KIDCL)  
Karachi,

**SUBJECT: BUS RAPID TRANSIT SYSTEM (BRTS) GREEN AND ABDUL SATTAR  
EDHI LINE- IITS COMPONENT**

Attention is invited to the meeting held under the chairmanship of Honorable Prime Minister of Pakistan held on 16<sup>th</sup> September 2018 at Karachi, wherein it was decided that all three component of BRT Green Line (i) Infrastructure Development (ii) Bus Operations, including fleet procurement and O&M for the contract period, and (iii) Intelligent Transport System shall be executed and financed by the GOP. In the regard, the TMTD has already written a letter to the Secretary Cabinet Division, GoP under intimation to all concerned including KIDCL, vide letter No.TMTD/GOS(GREEN LINE)/2019 dated 11<sup>th</sup> March, 2019, (Copy attached).

2. Recently, in a meeting held on 7<sup>th</sup> March, 2019 under the chairmanship of the Honorable Chief Minister, Sindh it was considered that IITS component of BRT Abdul Sattar Edhi Line (Orange line) may be taken up with IITS component of BRT Green Line under a single contract by KIDCL/GOP. This arrangement will ensure the uniformity of standards and integration. The Government of Sindh shall pay the cost component of BRT Abul Sattar Edhi Line IITS.

3. It is requested to confirm the proposed arrangement and also provide the engineering/cost estimate of the IITS of BRT Abul Sattar Edhi Line.

  
(MUHAMMAD AKHTAR GHORI)  
SECRETARY TO GOVERNMENT OF SINDH

A copy is forwarded for information to:-

- i. The Cabinet Secretary, Government of Pakistan, Islamabad
- ii. The Chairman Planning & Development Board, Government of Sindh.
- iii. The Principal Secretary to Chief Minister Sindh.
- iv. The Finance Secretary, Government of Sindh.
- v. The Director General, PPP Unit, Government of Sindh
- vi. The Deputy Secretary (Staff) to Chief Secretary, Government of Sindh.
- vii. The Managing Director, SMTA.
- viii. P.S. to Minister Transport Department, Government of Sindh
- ix. Copy for TMTD record.

RECEIVED AT

SMTD / TMTD Deptt

Dated: 19-03-2019



**SINDH INFRASTRUCTURE DEVELOPMENT COMPANY LTD.**  
**CABINET DIVISION**  
**GOVERNMENT OF PAKISTAN**  
6<sup>th</sup> Floor, Extension Block, Bahira Complex IV, Gizri, Karachi  
Tel: 021-35155101, Fax: 021-35155102  
[Info@greenline.gov.pk](mailto:Info@greenline.gov.pk); [www.greenline.gov.pk](http://www.greenline.gov.pk)

No. KIDCL(GLBRTS)/GM/2019/5302  
Dated 06<sup>th</sup> May-2019

To  
Secretary  
Transport Department  
Government of Sindh  
Karachi

**SUBJECT: ISSUANCE OF RFP FOR INSTALLATION OF IITS EQUIPMENT GREEN LINE BRTS**

Subsequent to the decision by the Federal Govt. to undertake the operations of Greenline BRTS for the initial years; KIDCL (now SIDCL) is in process of finalizing the RFP for the procurement, installation and maintenance of Intelligent Integrated Transport System (IITS) for Greenline BRTS Project.

2. Initially KIDCL hired the services of BLIC MGh a German Consultant to assist in designing, implementation and installation of the state of art IITS system catering the futuristic requirements of all the BRTS line of Karachi.

3. As per the agreement with the BLIC JV; Stage-III of consultancy contract with total cost of Rs. 102.0 Million was to be undertaken by the Government of Sindh. BLIC JV keeping in view the recent development of Operations of Green Line has further bifurcated the Consultancy supervision cost of IITS in Greenline and Orange line as under:

- (i) Greenline stage-III Consultancy supervision cost of Rs. 71.992 million
- (ii) Orange Line stage-III Consultancy supervision cost of Rs. 30.853 million

4. You are therefore requested to confirm government of Sindh's approval:

- i) If the orange line may be made part to IITS procurement process initiated by KIDCL (now SIDCL) and
- ii) Confirmation of orange line component of IITS Consultancy Supervision cost. This is required by BLIC JV for revision of IITS stage-III agreement.

5. Matter may kindly be treated as most urgent.

  
(Zubair Ahmed Channa) - PAS  
General Manager/F&A/CFO-KIDCL

Copy for Information to.

- Chief Executive Officer, SIDCL Cabinet Division Karachi
- Master File

## SCHEDULE 4 – EMPLOYER’S REQUIREMENTS

### 1. Background

Sindh Infrastructure Development Company Limited (SIDCL) (hereinafter referred to as the “Employer”) is committed to providing specific public transport services on Orange Line BRTS Corridor in order to ensure efficient levels of mobility. To this end, the Employer seeks to procure high quality public transport vehicles for the successful operation of Orange Line Bus Rapid Transit (BRT) services.

### 2. Employer’s objective

The Employer’s objective is to procure the required vehicles to provide public transport service ensuring a quality level of service for the public. Additionally, the Employer seeks to implement the training and maintenance regimes required to manage the fleet’s operation.

### 3. Specifications

**Table 3.1: BRT Vehicle Specifications**

NO.	SPECIFICATION	12-Meter BRT Vehicle
<b>Section 1: Specification Components</b>		
1.1	<b>Vehicles, components and training to be provided</b>	The Employer will be entering into an agreement to third party vehicle operating companies (herein after referred to as “BRT Vehicle Operators”) to operate the Mass Transit Services. In terms of this contract, the public transport vehicle supplier (hereinafter referred to as the “Supplier”) will be contracted to the Employer for the various components of this tender. For some of these components, the Supplier will be providing these services to the third-party Vehicle Operating Company with oversight from the Employer. The Supplier’s contractual arrangement will at all times remain with the Employer for the duration of this contract.
1.1.1	BRT vehicle fleet size	12 m Non-Articulated Buses – 20 No. of vehicles
1.1.2	Spare parts package	<p>The Supplier shall provide all replacement parts and supplies for all maintenance issues resulting from normal wear and tear as well as items requiring scheduled replacements. The third-party BRT Vehicle Operators will be responsible for all materials and associated costs for repair actions caused by road collisions or other unscheduled incidents.</p> <p>The supply of spare parts and supplies will cover the period from the delivery of the first vehicles through the duration of the contract in accordance with Article 9 (<i>Defects Liability</i>) of the Contract. There shall be no vehicles unavailable for services due to the lack of spare parts at the</p>



NO.	SPECIFICATION	12-Meter BRT Vehicle
		<p>depot site. The Employer will provide secure facilities at the depot for the storage of the spare parts.</p> <p>A BRT Vehicle Operator will be contracted by the Employer. The spare parts will be placed at the depot site. The Supplier must thus provide required set of spare parts, to ensure no down-time in vehicle availability.</p> <p>As a minimum, the quantity of spare parts given in Volume II of these Technical Specifications shall be kept on hand at the depot site at all times during the period of the contract (i.e. 36 months from acceptance of final tranche of vehicles). If a part or supply item is replaced, the stock at the depot site shall be replenished within 20 days.</p> <p>Before the conclusion of the contract, the Supplier will also provide a final stock of spare parts and supplies at the depot facility. The quantity listed in Volume II of these Technical Specifications 4 lists the minimum spare parts that will be included in the final stock of spare parts at the depot facility.</p> <p>If any spare part or supply listed in Volume II of the Technical Specifications 4 is not required, the Supplier will make note of this non-applicability. As part of its technical proposal, the Supplier will indicate any additional spare parts and supplies that will be provided during the contract period.</p> <p>Before the conclusion of the contract, the Supplier will also provide documentation on how the BRT Vehicle Operators will procure any future spare parts and supplies. This information will include a full list of the required spare parts and supplies along with pertinent parts order numbers, estimated lead times for delivery, and payment mechanisms and payment terms.</p>
1.1.3	Maintenance tools	<p>The Supplier shall deliver one set of the specified maintenance tools, software, and diagnostic equipment required to repair, service, and maintain each type of vehicles.</p> <p>The Employer aims to stock the depot facility with an initial set of required tools that will serve the typical day-to-day requirements of vehicle repair and maintenance.</p> <p>The diagnostic software and equipment are required for evaluating the status of the vehicle and for directing depot</p>

NO.	SPECIFICATION	12-Meter BRT Vehicle
		<p>staff to take necessary corrective maintenance and repair actions.</p> <p>As a minimum, the Supplier shall provide the following items:</p> <ul style="list-style-type: none"> <li>▪ One complete sets of the dollies and cradles necessary for the handling of engines, transmissions and other heavy components requiring specialist handling equipment.</li> <li>▪ One complete sets of all tools required for the maintenance of the principal vehicle components, including all tools for standard maintenance, repair, and re-installing of vehicle components.</li> <li>▪ One sets of maintenance diagnostic software, with a multi-site and multi-use license.</li> <li>▪ One sets of diagnostic equipment to evaluate the status of vehicle components, including diagnostic equipment for the engine unit, gearbox, system electronics, air suspension system, and wheel and axle alignment.</li> </ul> <p>Volume II of these Technical Specifications lists the minimum tools requirements to be provided by the Supplier at the end of contract term. The Supplier must also provide a list of any additional tools required to service the vehicles, and particularly the Supplier must list any specialised tool (s) requirements.</p>
1.1.4	Warranty	<p>The warranty shall be provided on the chassis, body, and all vehicle components to protect against any defects in design, workmanship, equipment, or materials. With the exception of the electric storage and propulsion system (i.e. battery packs and electric motors), the warranty for all other parts and components will commence from the date of delivery of the vehicle through the duration of the contract (i.e. 36 months from acceptance of final tranche of vehicles) in accordance with Article 9 (<i>Defects Liability</i>) of the Contract. For the battery packs and electric motors, the Supplier will provide all necessary replacements for 12 years or 1.2 million kilometers of service, whichever of these two milestones are realized first. The battery packs shall be replaced under this warranty whenever the battery capacity falls below 70% of its original capacity at full charge.</p>

NO.	SPECIFICATION	12-Meter BRT Vehicle
		The warranty will stipulate that the Supplier is responsible for all repair and replacement costs due to the premature failure of any part or component due to defects in design, workmanship, equipment, or materials. The warranty will not cover any costs associated repairs or replacements due to the actions of the BRT Vehicle Operators. Among the types of repairs or replacements not covered under the warranty are road collisions or other unscheduled incidents.
1.1.5	Registration, licensing and homologation	The Supplier will ensure all vehicles are locally registered, licensed, and homologated by the responsible authorities prior to final turnover to the Employer. While the Employer will be the named leads in officially registering and licensing the vehicles, the Supplier shall lead the facilitation of all required processes to ensure registration, licensing, and homologation.
1.1.6	Cost of Inland Transport and associated insurance to Orange Line – Delivery Point	<p>The Supplier will be responsible to bear all the cost of inland transport and associated insurances while delivering all the Goods to the Orange Line Depot.</p> <p>Insurances procured by the Supplier should include comprehensive insurance for terrorism, vandalism and sabotage.</p> <p>The Supplier shall ensure that the relevant insurances shall continue to be valid for three (3) months after the delivery of the Goods to the Orange Line Depot.</p>
1.1.7	Maintenance supervision	<p>The Supplier shall provide vehicle maintenance supervision for a period of 36 months from the date of acceptance of last tranche of vehicle.</p> <p>The Supplier shall be responsible for the maintenance supervision and all tasks/responsibilities required under it since the time first vehicle will be delivered to site, however, contractual completion time of 36 months for maintenance supervision shall start from acceptance of final tranche of vehicles. During this time period, the Supplier will be responsible for overseeing all scheduled maintenance activities of the vehicles. The BRT Vehicle Operators will be providing the maintenance staff who will be advised by the Supplier's Maintenance Supervisor in carrying out the routine maintenance activities.</p>

NO.	SPECIFICATION	12-Meter BRT Vehicle
		<p>The Supplier shall ensure that sufficient maintenance is applied during the 36-months period so that at least 95% of the fleet will be operationally available at any time during system operating hours. "Operationally available" means that the vehicles are in a functional condition that could be utilized in customer services without any restrictions while meeting all requirements in this Technical Specification.</p> <p>The Maintenance Supervisor position will be full-time (i.e. 40 work hours per week). The maintenance supervision activities will take place at the depot site. The Maintenance Supervisor will work closely with the Employer to appropriately schedule his/her time at each depot site.</p> <p>During the period of maintenance, the Supplier shall be responsible for supervising all scheduled maintenance activities of the vehicles. The maintenance services will include but not limited to engine tuneup, lubrication, replacement of filters, coolant, spark plugs, fuses, worn wiper blades, worn brake pads and linings or worn clutch linings, replacement of tires (if required), batteries, air conditioning.</p> <p>The Supplier shall also provide all replacement parts for all maintenance items caused through normal wear and tear as well as scheduled replacements.</p> <p>Conversely, the private operating company (or companies) providing the customer public transport services will be responsible for all repair actions caused by road collisions or other unscheduled incidents mentioned in next para.</p> <p>The Supplier shall not be responsible for any maintenance arising out of the following;</p> <ul style="list-style-type: none"> <li>✓ Repairs and adjustments required as a result of racing, overloading, negligence, modification, alteration, tampering, disconnection, improper adjustments or repairs, accident and use of add-on-parts/material.</li> <li>✓ Cosmetic or surface corrosion from stone chips or scratches in the paint.</li> <li>✓ Damage or Surface corrosion from the environment such as acid rain, air borne fall out (chemicals, tree sap, etc.), salt, hail, windstorms, lightning, floods, other acts of God and the like is not covered.</li> </ul>

NO.	SPECIFICATION	12-Meter BRT Vehicle
		<ul style="list-style-type: none"> <li>✓ Repairs and adjustments caused by improper maintenance not carried out by Supplier, use of fluids other than the fluids specified in Manufacturer's manual.</li> <li>✓ Normal noise, vibration, wear, tear or deterioration such as discoloration, fading, deformation or blur.</li> </ul>
1.1.8	Maintenance training program	<p>The Supplier shall deliver a maintenance training program that will properly prepare the BRT Vehicle Operators to independently maintain its vehicle fleet after the end of the contract period of maintenance supervision by the Supplier. The training program will take place at intervals over at least 60 hours of actual training sessions. These sessions will include both classroom instruction as well as hands-on repair work in the depot maintenance area. Approximately 5 persons from BRT Vehicle Operating Company will be trained.</p> <p>Prior to the end of the contract period, the Supplier will also deliver a second set of training sessions. These sessions will specifically address future maintenance issues to be faced by the BRT Vehicle Operating Company. In particular, this final training will focus on any potential engine rebuild work or battery pack replacement work that would be required. This second set of training sessions should cover at least 10 hours of training. Approximately 5 persons from BRT Vehicle Operating Company will be trained in this final training program.</p> <p>The schedule of the maintenance training program is:</p> <ul style="list-style-type: none"> <li>i. Phase I - Completion of the first maintenance training program: Within maximum of eight (8) months from Notice to Proceed</li> <li>ii. Phase II - Completion of the second and final maintenance training program: Prior to issuance of First Release Certificate.</li> </ul>
1.1.9	Driver training program	<p>In order to facilitate a disciplined operation of the vehicle fleets, the Supplier shall implement a driver training program that will instill safe and professional driving skills.</p> <p>The training course will culminate in the drivers receiving a course (competency) certificate indicating driving proficiency. The driver training program will prepare the drivers to undertake licensing exams under National law to operate large public transport vehicles.</p>

NO.	SPECIFICATION	12-Meter BRT Vehicle
		<p>Approximately 40 vehicle drivers over a period of two months. Each trainee shall spend at least 8 hours in the actual road testing of a vehicle during the course of the training program. All related fuel expenses for this training will be borne by the Supplier.</p> <p>The selection of the drivers for the course will be the responsibility of the BRT Vehicle Operating Company. The Employer will provide the training venue (including classrooms and driver training area preferably inside the depot facility).</p> <p>A total of 25 hours of training, both classroom and road testing, shall be delivered (4 hours per day for 4 weeks). Drivers will be available for training for four hours per day, five days per week during a period of at least 4 weeks.</p> <p>The course topics will include:</p> <ul style="list-style-type: none"> <li>▪ Driving skills</li> <li>▪ Traffic regulations</li> <li>▪ Safety</li> <li>▪ Emergency protocols</li> <li>▪ Customer service</li> <li>▪ Public transport license testing.</li> </ul> <p>The actual testing for a National public transport driver's license will be the responsibility of the Employer and the BRT Vehicle Operating Company. The Supplier will therefore NOT be responsible for any direct testing costs, such as application fees.</p> <p>The Supplier shall also deliver a training course given to a minimum of 3 drivers on the operation of the tow vehicles. This training will consist of at least eight hours of training on the proper procedures for connecting the BRT vehicles to the tow vehicles. This training will also include hands-on training by the drivers to tow the BRT vehicles along the corridor.</p> <p>The schedule of driver training program is:</p> <ol style="list-style-type: none"> <li>i. Commencement of driver training program: Within maximum of seven (7) months after the Notice to Proceed</li> <li>ii. Completion of driver training program: Within maximum two (02) months after the commencement of driver training program.</li> </ol>

NO.	SPECIFICATION	12-Meter BRT Vehicle
1.1.10	<b>Tow Truck Vehicle</b>	<p>The Supplier shall provide one (1) tow truck vehicle for the entire fleet of 12-meter BRT vehicles. The tow truck vehicles will be kept by the Vehicle Operating Company at the depot facility.</p> <p>The tow truck vehicles shall be sized and powered to tow either a 12-meter or 18-meter vehicle with a speed of at least 30 kilometers per hour. The connecting arm and hitch shall be designed so that the BRT vehicles can be towed without incurring damage of material stresses. The tow truck vehicle shall have storage to be capable of carrying basic tools and certain spare parts, including a replacement tire and wheel set for the BRT vehicles. The vehicle cabin shall be sufficiently sized for the driver and at least two passengers.</p> <p>The Supplier shall be responsible for the homologation (if necessary), registration, and licensing of the vehicle.</p> <p>Tow truck vehicles shall be delivered at a maximum of six (6) months from the date of Notice to Proceed.</p>
1.2	<b>BRT Fleet Delivery Schedule</b>	<p>i. Completion of first full unit at Factory: Seventy (70) days from the date of Notice to Proceed.</p> <p>ii. Delivery of single batch/tranche of vehicles comprising of a full (100%) of the 12-meter vehicle quantity: Maximum of three (3) months from the date of Approval of Final Production Bus Design.</p>
1.3	<b>Approval process</b>	As per the relevant provisions of the Contract including the approvals set out in the Contract Document.
1.4	<b>Payment Schedule</b>	As per Schedule 7 ( <i>Schedule of Payment Milestones</i> ) of the Contract.

Section 2: Specifications Summary		
S. No.	Criteria	Specification
1.	Model year	2020 or latest
2.	Vehicle length (minimum - maximum)	11.5 - 13.0 meters
3.	Vehicle width (not including mirrors)	2.55 meters
4.	Vehicle height (from road surface to highest point on roof) (maximum)	3.3 meters
5.	Floor height (from road surface to interior floor at doorways)	350 mm
6.	Ceiling height in front passenger area (from interior floor to ceiling) (minimum)	2.1 meters
7.	Clearance at doorway (from interior floor to door header) (minimum)	1.9 meters
8.	Axle load, front axle (maximum)	7,700 kg
9.	Axle load, middle axle	Not Applicable
10.	Axle load, rear-axle (maximum)	12,000 kg
11.	Grade ability (Fully Laden)	Min 20%
12.	Angle of Approach (Fully Laden)	$\geq 10$ degrees
13.	Angle of Departure (Fully Laden)	$\geq 9$ degrees
14.	Steering	Driver compartment on right-hand side of vehicle for vehicle operation on left-hand side of Roadway. Power Steering hydraulic assisted with height and angle adjustment
15.	Useful life of vehicle (projected)	1.2 million km or 12 years
16.	Number of median-side passenger doorways	2
17.	Center-line distance between the two doorways	2.7 meters
18.	Free door width per passenger door (minimum)	1.4 meters
19.	Number of curb-side passenger doorways	2
20.	Number of manual pull-out boarding bridges from curb-side doors and median-side doors	4 (one for each door)
21.	General seat configuration	2 x 2 (predominantly)
22.	Seat pitch (minimum)	730 mm
23.	Seat width (minimum)	420 mm
24.	Number of passenger seats (including preferential seats but excluding flip down seats and driver seat) (minimum)	28



S. No.	Criteria	Specification
25.	Number of wheelchair bays (minimum)	1
26.	Total number of flip-down seats in wheelchair bay(s) (minimum)	2
27.	Length of wheelchair bay(s) (minimum)	1.3 meters each
28.	Number of seats in front women-only section (minimum)	8
29.	Thickness of flooring material (minimum)	2 mm
30.	Side window height (minimum)	980 mm
31.	For the median side (right-side) of the vehicle, distance of outside edge of the wing mirror from the vehicle body (maximum)	150 mm
32.	For the curb side (left-side) of the vehicle, distance of outside edge of the wing mirror from the vehicle body (maximum)	200 mm
33.	Tire width	275 mm
34.	Tire construction type	Radial
35.	Distance between outside edge of tire sidewall to outside edge of vehicle body for front axle (maximum)	125 mm
36.	Distance between outside edge of tire sidewall to outside edge of vehicle body for middle axle (maximum)	Not Applicable
37.	Distance between outside edge of tire sidewall to outside edge of vehicle body for rear axle (maximum)	80 mm
38.	Power ratio (minimum)	15 HP per ton gross vehicle mass
39.	Power on gradient (minimum)	Maintain 60 km/hr on 4% up grade and 40 km/hr on 8% upgrade when fully loaded
40.	Projected maximum operating velocity (maximum)	80 km/hr
41.	Propulsion system	Diesel-electric hybrid
42.	Size of electric motor for propulsion system (minimum)	120 kW
43.	Internal noise standard (maximum)	80 dB
44.	External noise standard (maximum)	85 dB
45.	External noise standard when idling (maximum)	65 dB
46.	Turning radius, outer wheel track (maximum)	12.0 meters

Section 3: Legislation and Standards		
3.1	National legislation and standards	All vehicles shall comply with all national, provincial and local legislation, regulation or by-law as well as with the relevant national standards. As specialist suppliers, Suppliers are expected to be fully familiarized with the legal requirements of public transport vehicles, of the types proposed, in the given national context.

Section 4: Weights and Dimensions		
4.1	Axle loads	<p>The vehicle axles must be capable of operating with the following maximum loads:</p> <ul style="list-style-type: none"> <li>▪ Front axle: 7,700 kg</li> <li>▪ Middle axle: Not Applicable</li> <li>▪ Rear axle: 12,000 kg</li> </ul>
4.2	Overall vehicle width	<p>The vehicles shall meet a targeted width of 2.55 meters, as measured from one exterior side to the other (excluding wing mirrors). This dimension shall be achieved within a set range of between 2.54 meters to 2.56 meters.</p>
4.3	Floor height	<p>The vehicles are to be low entry, allowing ease of access for the curb-side boarding. The targeted floor height, based on the distance from the road level to the floor of the vehicle at the doorways, is 350 mm. This dimension must be achieved within a tolerance of +/- 10 mm even when the vehicle is unevenly loaded with passengers bunching on one side. The rear portion of the vehicle (i.e. the portion of the vehicles after the last doorway) may be raised with steps.</p>
4.4	Vehicle length	<p>The vehicle length may be in the range from 11.5 meters to 13.0 meters.</p>
4.5	Interior floor to ceiling	<p>The interior clearance height (from the vehicle floor to the ceiling) for the front passenger area shall be a minimum of 2.2 m.</p> <p>The interior clearance height (from the aisle way floor to the ceiling) for the raised rear passenger area shall be a minimum of 1.85 m.</p> <p>At the doorways, the minimum clearance height, from the vehicle floor to the door header, shall be 1.9 m.</p> <p>The Suppliers are encouraged to maximize ceiling clearance heights.</p>

Section 5: Body		
5.1	Structure	<p>The body shall be designed to meet a useful vehicle life of 12 years or 1.2 million kilometers, whichever of these two milestones arrive first. The body shall be reinforced at joints where stress concentration may occur. The vehicle shall safely withstand road shocks and other conditions found in urban services. Body paneling shall have adequate thermal and acoustic properties and shall not vibrate unduly while the vehicle is in operation.</p> <p>The structure shall meet the compliance standards for the rollover test stipulated through Regulation 66 of the United Nations Economic Commission for Europe (ECE-R66).</p>
5.2	Materials and corrosion resistance	<p>High strength corrosive-resistant material shall be used in construction of the body. Mild steel is the minimum requirement for the vehicles. The use of materials with superior strength, corrosion resistance, and overall durability is encouraged. The use of stainless steel alloys (such as 3CR-12), high-carbon steel, glass-reinforced plastic (GFRP), aluminum, and other materials should be considered, particularly for critical sections of the body and structural elements.</p>
5.3	Body Shape	<p>The bus rapid transit project represents an overall transformation of public transport for the metropolitan area. The aesthetics of the vehicles will play a significant role in transforming the public's perceptions of public transport services.</p> <p>The Employer therefore requires a body design that evokes a modern, tram-like appearance with sleek and aerodynamic curve lines. This visual effect can be achieved by:</p> <ol style="list-style-type: none"> <li>a rounded vehicle front with a curved windscreen (Figure 1);</li> <li>a slanted vehicle front (Figure 2); or</li> <li>a rounded augmented body piece added to the front roof-line of the vehicle (Figure 3).</li> </ol> <p>Option 1 (curved vehicle front) and option 2 (slanted vehicle front) may also include the rounded augmented body piece on the roof-top (option 3).</p> <p>Figures 1, 2, and 3 provide illustrations of the acceptable modern body shape options. A flat vehicle front with no rounded, aerodynamic features will mean that the Supplier's proposal will be considered non-responsive to the technical requirements.</p>

5.4	Conduciveness washing to	The exterior and body features, including grilles and louvers, shall be shaped to allow complete and easy cleaning by an automatic vehicle washer without snagging washer brushes. Water and dirt should not be retained in or on any body feature of the vehicle after leaving the washer.
5.5	<b>Painting</b>	
5.5.1	Vehicle livery	Vehicle exteriors shall be painted to the graphic design submitted by Employer. The general form of the livery design is given in Figure 4. The details of the final design shall be provided during the pre-production period.
5.5.2	Painting of vehicle body	<p>The painting of the vehicle shall employ modern best practice. Paints shall produce a superior finish that will support efforts to position the system as a choice option for all passengers. It is preferred that the paint materials and application procedures utilized will be as environmentally-friendly as is practically possible, including consideration of water-based paints.</p> <p>The paint shall be hard wearing and able to withstand the operating conditions of an urban bus. Such wear resistance shall include the ability to withstand regular machine-washing of the vehicles. The process and materials used shall be such as to allow ready repainting of minor scratches and scrapes.</p> <p>All primers, sealers, paint and any other materials used shall be compatible to assure chemical bond, adhesion, overall gloss retention, and to assure full warranty by the manufacturer.</p> <p>The finish coat shall be free of runs, sags, and areas of no gloss. There shall be no bare or exposed metal surfaces showing on the exterior of the vehicles. If vehicle components are to be imported and shipped via sea, then a special coating shall be applied to protect against damage from sea spray.</p>
5.5.3	Undercoating	The underside of the under-frame, flooring and stepwells, wheel-housings and all exposed underfloor surfaces shall be treated with a fire-retardant coating.
5.6	<b>Doorways</b>	

5.6.1	Number of passenger doors and dimensions	<p>The vehicle shall have two median-side passenger doorways and two curb-side passenger doorways. The doorways shall be located between the two axles of the vehicles.</p> <p>The distance between the centerline of the first and the second for both median side and curb side shall be 2.7 m.</p> <p>Each doorway will provide a minimum free width of 1.4 m for ease of passenger entry and egress. The minimum clearance height at the doorway shall be 1.9 m.</p>
5.6.2	Door type and characteristics	<p>Doors should be two-leaf inward swinging doors.</p> <p>Structure of the doors, their attachments, inside and outside trim panels, and any mechanism exposed to the elements shall be corrosion-resistant. Door panel construction shall be of corrosion-resistant metal or reinforced non-metallic composite materials. The doors, when fully opened, shall provide a firm support and shall not be damaged if used as an assist by passengers during ingress or egress. Door edges shall be sealed to prevent infiltration of exterior moisture, noise, dirt and air elements from entering the passenger compartment, to the maximum extent possible based on door types. The closing edge of each door panel shall have no less than 5 cm of soft weather stripping.</p> <p>The doors, when closed, shall be effectively sealed, and the hard surfaces of the doors shall be at least 10 cm apart (not applicable to single doors). The combined weather seal and window glazing elements of the front door shall not exceed 10 deg of binocular obstruction of the driver's view through the closed door.</p>
5.6.3	Opening / closing mechanism	<p>Doors shall be electro-pneumatically operated by the driver and shall be able to be opened or closed independently or in unison with each other.</p> <p>System shall include an audible announcement that informs passengers when the doors are either about to open or close. Door movements shall also be shown by luminous indicators. The indicators shall show red when the door is closed and Orange when the door is open.</p> <p>Vehicle door opening and closing shall be wirelessly communicated to the sliding doors at the station interface. The design of the wireless communication and</p>

		<p>the actual activation of the station doors must be approved by the Employer prior to installation.</p> <p>The following requirements must be met:</p> <ul style="list-style-type: none"> <li>▪ The activation of bus door opening/closing must be linked and coordinated with the station doors opening/closing.</li> <li>▪ The station doors will open 0.5 to 1.0 seconds after the vehicle doors and close 0.5 to 1.0 seconds before the vehicle doors. This must also be coordinated with the expansion/contraction of the boarding bridges. The time delay between the opening/closing of the vehicle and station doors must be configurable and adjustable.</li> <li>▪ The wireless signal transferred from the vehicle to the station must be via a secure communication protocol that will ensure that the station doors are only activated by valid requests. The Supplier will work closely with the Employer to provide an open standard door opening system that will be compatible with the third-party company providing the station door system.</li> <li>▪ Stations/platforms will be of varying sizes with different doorway openings. The Supplier must ensure that smaller vehicles with fewer doors only activate the relevant and corresponding station doors. Station doors with no corresponding vehicle door must not open.</li> </ul> <p>The actual hardware (sliding doors and electrical system) of the station doors will be provided by the Employer through a contract with another company.</p>
5.6.4	Door safety and emergency operation	<p>Doors shall not open until the vehicle comes to a stop. Doors shall have an interlock control with brake and accelerator to prevent movement of vehicle with doors in open position. The doors shall function even with the ignition off.</p> <p>Anti-pinch sensors shall be installed to retract the door automatically if any obstruction with a width of 25 mm or greater is caught between any point of the doorway. The anti-pinch system will prevent injury due to wrists, ankles, or belongings being caught in the doorway.</p>

5.6.5	Alignment indicators	<p>Visual alignment indicators shall be utilized to properly align the vehicle both along the length of the stations as well as the distance away from the station platform.</p> <p>The stopping point for the vehicle along the length of the station platform shall be demarcated by two decaled lines on the side driver window. These lines will correspond to a chevron sign on the side of the station.</p> <p>For the alignment of the pathway towards the station, decaled lines on the front windscreen will be matched with a line in the roadway. The lines in the windscreen will assist the driver in aligning to the roadway marking.</p> <p>The decaled lines on the side window and the front windscreen will be made of a durable and visible material.</p> <p>The precise location of the markings on the side window and windscreen will be provided by the Employer.</p>
5.6.6	Closing Force	<p>Closing door edge speed shall not exceed 30 cm per second, and opening door speed shall not exceed 50 cm per second. Power doors shall not slam closed under any circumstance, even if the door is obstructed during the closing cycle. If a door is obstructed during the closing cycle, the pressure exerted on the obstruction shall not increase once initial contact has been made.</p> <p>Doors shall be equipped with a sensitive edge or other obstruction sensing system such that if an obstruction is struck by a closing door edge, the doors will stop and/or reverse direction prior to imparting a 5-kilogram force on 7 square centimeters of that obstruction. Whether or not the obstruction sensing system is present or functional it shall be possible to withdraw a 3.8-centimeter diameter cylinder from between the center edges of a closed and locked door with an outward force not greater than 16 kilograms.</p>



5.7	Windows
5.7.1	<p>Side and rear windows</p> <p>Windows shall be provided along the sides of the vehicle as well as the rear of the vehicle.</p> <p>The side and rear window areas shall be as large as possible to give the seated and standing passengers an unobstructed exterior view. The window unit shall be a minimum of 980 mm in height. Suppliers are encouraged to provide larger panoramic-styled windows.</p> <p>Windows shall be of the bonded type. Windows shall not be mounted in rubber molds.</p> <p>All glass shall be tinted to an approximate level of 70% to 80% light transmission (i.e. glass permits approximately 70% - 80% of light to enter).</p> <p>Side windows shall have the look of a seamless or continuous window when viewed from exterior of the vehicle.</p> <p>The exterior of the windows shall withstand damage and scratching from use of vehicle wash system. This would include, but not limited to soaps, spinning brushes, as well as hand brushes.</p> <p>A positive lock type emergency latch shall be furnished on each emergency window frame. Both sides of the vehicle shall have a window decal describing emergency window operation procedures.</p> <p>The driver's side windows shall be split, sliding windows. The sliding portion shall move freely without rocking or binding. Driver windows shall be glazed with tinted laminated safety glass. Glass shall be tinted at the top third (1/3), to meet safety standards.</p>
5.7.2	<p>Opening of windows</p> <p>While the vehicles will be fitted with air conditioning, there will be the option of manually-opened vents to be used in case of air conditioning failure besides the roof vents. These windows shall incorporate an upper transom portion. The transom shall be between 25 and 35 percent of the total window area. The lower portion of the window shall be fixed. The transom portion shall be hinged along the lower edge and open inward. This should be visually merged as much as possible with the fixed windows around them. However, the window vents will normally be locked during periods of the year</p>

		when air conditioning is to be utilized. The unlocking of the windows should be controllable by the driver from his station and should not be unlocked by a passenger. The locking can be done manually at each vent by simply closing them.
5.7.3	Windshield and windshield wipers	<p>The windshield shall be designed for easy replacement and maintenance. Windshields shall be angled sufficiently to reduce glare from the interior vehicle lighting. A fully adjustable sun visor shall be installed for driver's use. The installation shall preclude vibration in normal street operation. The visor shall be a full see through, mesh style with a release cord that allows the visor to return to the normal position.</p> <p>Two electric-operated heavy duty windshield wipers shall be furnished. The wiper motors shall be variable speed having at least a high and low speed setting with an intermittent setting. The windshield wiper system shall include a "self-parking" feature, which means the wiper returns to its base position when the wiper is disengaged. A windshield washer shall also be provided. The largest wiper blade possible for windshield design shall be used.</p>
5.8	<b>Exterior panels, roof gutter and bumpers</b>	
5.8.1	Exterior panels	Exterior panels shall be sufficiently stiff to prevent vibration, drumming or flexing while the vehicle is in service.
5.8.2	Roof gutter	<p>Roof gutters shall be installed if body style does not stop water flow into or on windows, doors, and mirrors. The roof gutters will be installed over the side windows and doors, if necessary.</p> <p>When the BRT vehicle is decelerated, the gutters shall not drain onto the windshield, or operator's side window, or into the door boarding area. Cross sections of the gutters shall be adequate for proper operation.</p>
5.8.3	Bumpers	No part of the vehicle shall be damaged as a result of a ten (10) kph impact at the front or rear of the vehicle. The energy absorption system of the bumper areas shall not require service or maintenance in normal operation during service life of the vehicle.
5.8.4	License Plate provisions	Provisions shall be made to mount local standard size license plates on the front and rear of the BRT vehicle. These provisions shall direct mount or recess the license plates so that they can be cleaned by automatic BRT vehicle washing equipment without being caught by the brushes. License plates shall be mounted according to local rules and shall not allow a toehold or handhold for unauthorized riders.

5.9	Wing mirrors	<p>Vehicles shall be equipped with two outside rear view mirrors, mounted on each front corner of the vehicle. The wing mirrors shall be motorized and heated. The control switches shall be mounted on the driver's control console. The mirrors shall be fully adjustable to give the driver a full view of the required area.</p> <p>In order to ensure that the wing mirrors will not collide with the station infrastructure during normal operation, the distance from the outside edge of the right-side wing mirror to the outside edge of the vehicle body shall not exceed 150 mm. For the left-side wing mirror, the distance from the outside edge of the wing mirror to the vehicle body shall not exceed 200 mm.</p> <p>In order to ensure effective driver visibility, the wing mirrors shall have a minimum width of 170 mm and a minimum height of 250 mm.</p>
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5.10	External access points	
5.10.1	External access doors	<p>Access doors shall be provided, where necessary, for the easy maintenance of equipment. The access doors shall be provided with positive hold open devices and corrosion resistant latches.</p> <p>Access openings shall be sized for easy performance of tasks within the compartment including tool operating space. Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the BRT vehicle. They shall close flush with the body surface.</p> <p>When engine access door is open, it shall not obstruct the rear vehicle lights. Access to the engine compartment, transmission compartment, radiator compartment, and ITS control compartment doors shall be controlled by some form of key access ("T" key style is acceptable). There shall be an access door for emergency workers to gain entry to the "Battery Disconnect" and it shall be labelled as such. This access door shall not require tools to gain access.</p>
5.10.2	Service Area Lighting	<p>Lights shall be provided in the engine and all other compartments, where service may be required, to generally illuminate the area for night emergency repairs or adjustments. Sealed lamp assemblies shall be provided in the engine compartment and shall be controlled by a switch located near the rear start controls in the engine compartment. Necessary lights, located in other service compartments, shall be provided with switches on the light fixture or convenient to the light.</p>
5.10.3	Roof escape hatch/air vents	<p>At least one emergency roof escape hatch shall be provided in each vehicle. The hatch shall have a seal around the opening, and shall be opened by pulling the release handle. Instruction decals shall be placed on the underside of the hatch. The roof hatch may also act as a fresh air ventilator at times when the air conditioning is not in use.</p>

Section 6: Interior		
6.1	Colors, maps, and advertising	
6.1.1	Color Scheme	<p>The color of the wall panels shall contrast with that of the surface of the floor and this contrast is to be most clearly defined at the junction of the floor to the wall. The actual colors to be utilized will be determined by the Employer during the pre-production period.</p> <p>The color of the wall panels shall contrast with that of the surface of the floor and this contrast is to be most clearly defined at the junction of the floor to the wall. The actual colors to be utilized will be determined by the Employer during the pre-production period.</p>
6.1.2	Panels and trim	<p>The interior of the access doors shall blend in with the appearance of the vehicle interior. The interior side walls, ceiling trim panels, and sections between large side windows down to the bottom of the window openings shall consist of an aesthetically-attractive and durable material. The materials must be approved by the Employer during the pre-production period.</p> <p>The interior of the access doors shall blend in with the appearance of the vehicle interior. The interior side walls, ceiling trim panels, and sections between large side windows down to the bottom of the window openings shall consist of an aesthetically-attractive and durable material. The materials must be approved by the Employer during the pre-production period.</p>
6.1.3	System map	<p>To provide excellence in system legibility, system network maps will be placed on all vehicles. The system maps will be provided in a large size that will be visible to the passenger area to the extent possible. The Supplier shall provide at least one location inside the vehicle for a system map.</p> <p>The actual provision of the maps is the responsibility of the Employer.</p> <p>To provide excellence in system legibility, system network maps will be placed on all vehicles. The system maps will be provided in a large size that will be visible to the passenger area to the extent possible. The Supplier shall provide at least two locations inside the vehicle for a system map.</p> <p>The actual provision of the maps is the responsibility of the Employer.</p>

6.1.5	Advertising	<p>In order to optimize system revenues, some discrete advertising space will be permitted inside the vehicles. The possible spaces for the advertising include the space above the windows as well as on any partition panels not utilized for the system route map. The advertising spaces will be designed to include mechanisms to hold the advertising in place.</p> <p>The Supplier will note the proposed locations of the advertising in the submitted interior layout drawings of the vehicle.</p> <p>In order to optimize system revenues, some discrete advertising space will be permitted inside the vehicles. The possible spaces for the advertising include the space above the windows as well as on any partition panels not utilized for the system network map. The advertising spaces will be designed to include mechanisms to hold the advertising in place.</p> <p>The Supplier will note the proposed locations of the advertising in the submitted interior layout drawings of the vehicle.</p>
<b>6.2</b>	<b>Grab-rails/stanchions/straps</b>	
6.2.1	Grab-rails stanchions and	<p>Full grip stanchions and grab-rails shall be provided for the safety of the standing passengers and for ingress and egress. The stanchions and grab rails shall be properly supported and held in place according to industry standards. Ceiling grab-rails, one on each side of vehicle aisle way, shall be even with aisle edge of the seats.</p> <p>If relevant to the chosen interior design, a horizontal passenger assist shall be placed across the front of the vehicle in order to prevent injuries on the windshield in the event of a sudden stop.</p> <p>A high-contrast color shall be used for the grab-rails and the stanchions. The color will be determined by the Employer during the pre-production period.</p> <p>The height and number of grab handles should facilitate passenger in having comfortable standing position.</p>
6.2.2.	Straps	Color coordinated subway straps shall be installed on grab-rails running length of vehicle. The straps shall be of a soft material such as leather and shall have a positive fastening system.
<b>6.3</b>	<b>Internal layout</b>	Suppliers shall provide drawings of the proposed interior layout of each vehicle. The chosen layout may be altered through discussions with the Employer, provided there are

		no cost implications of such alterations. An example of a possible layout is provided in figure 6.
<b>6.4</b>	<b>Passenger seats</b>	
6.4.1	Seating configuration	<p>In general, seats will be oriented in a 2 x 2 configuration, with the exception of areas such as the back of the vehicle and the flip-down seats in the wheelchair bays. Since customer comfort and personal security is a principal objective, a configuration of 3 x 3 or 3 x 2 is not permitted.</p> <p>For the most part, the seats will face forward. However, the flip-down seats in the wheelchair bays will be orientated to the side. It is also acceptable to include some side-facing or rear-facing seating if the configuration helps to maximize the number of seats. For example, rear-facing seating may be applied for this purpose on the rear-side of the wheel wells.</p>
6.4.2	Seating dimensions	<p>A minimum 730 mm leg pitch shall be provided. At preferential seats, the clear distance from the front of the seat to the rear of the next seat shall not be less than 230 mm. Where the preferential seat faces a bulkhead or partition more than 1,200 mm in height, this distance is to increase to a minimum of 300 mm.</p> <p>The seat width shall be a minimum of 420 mm.</p>
6.4.3	Number of seats	A minimum of 28 seats shall be provided. This amount excludes the additional seats provided by flip-down seats in the wheelchair bays. It is expected that the one wheelchair bay of 1.3 m each in length will each be able to accommodate space for at least a total of two flip-down seats.
6.4.4	Standing passengers	No vehicle is expected to exceed a standing passenger capacity of 6.0 passengers per square meter. However, the axle load specifications have been set to accommodate temporary conditions of over-crowding.
6.4.5	Seating materials	<p>The base structure of the seat shall be hard, durable plastic. The passenger contact areas at the base and at the back shall be a soft padded plastic material. All materials shall be durable and easily maintained and cleaned. The color of the seat will be selected by the Employer during the pre-production period. The color of the seating in the women-only section of the vehicle shall be different than the color of the seating in the men's section of the vehicle.</p> <p>An example of the type of seating material being sought by the Employer is provided in figure 7. The Supplier will provide example images of the proposed options for the seat type and materials.</p>

		The type, style, and color of the seating materials must be approved by the Employer during the pre-production period.
6.4.7	Hand-hold rail	All aisle passenger seats shall be equipped with a hand-hold rail at the top of the seat back-rest. A hand-hold rail at the sides is encouraged, since it is often useful for small children.
6.5	<b>Specials needs seating</b>	The vehicle shall include provisions for wheelchair-compatible open bays as well as priority seating areas for women only.
6.5.1	Wheelchair bays	<p>Minimum One wheelchair bay shall be provided. Wheelchair bay shall be forward facing. Minimum of 1 wheelchair bay will be accommodated in the wheelchair bay area. Each wheelchair bay shall be a minimum of 1.3 m in length.</p> <p>The wheelchair bay will also accommodate flip-down seating that can be utilized when no wheelchair patron is using the space.</p> <p>The wheelchair bay is to be provided with approved independent passenger and wheelchair restraint systems including seat belts and stanchions as necessary. The equipment is to comply with ISO 10542. The wheelchair bay shall include a headrest backboard to minimize injury in case of an accident or sudden stop.</p> <p>The wheelchair bay shall be designated a priority area for wheelchair patrons as well as other disabled persons and customers with prams. The wheelchair bays shall have signage indicating this prioritization. A pictogram indicating this priority will also be placed adjacent to the exterior of the doorway nearest to the wheelchair bay.</p>
6.5.2	Preferential seating area for women	The front section of the vehicle will be for women only in order to reduce incidences of harassment. These seats should be a different identifiable color than the seats in the men's section of the vehicle. Likewise, pictograms shall be placed on the walls of the front section of the vehicle to note that the area is only for women and disabled passengers.
6.6	<b>Articulation unit</b>	Not Applicable
6.7	<b>Driver's compartment</b>	
6.7.1	Driver's seat	The driver's seat shall include: headrest, high back, dual air lumbar, air operated side bolsters, and an automatic fore and aft slide. The driver's seat shall be upholstered in all cloth fabric. The driver's seat will be equipped with a 3-point seat belt, and a built-in maxi alarm indicating that



		the brake has not been applied when driver takes pressure off the seat.
6.7.2	Enclosed compartment	<p>The driver's area shall be an enclosed compartment. Behind the driver shall be a partition wall, but the wall shall include a window to allow visibility into the passenger area. To the left-side of the driver shall be a clear upper wall and doorway to allow the driver to have full peripheral vision and to be able to communicate freely with the conductors. The doorway to the driver's compartment shall be lockable for security purposes.</p> <p>Figure 8 provides an example of an enclosed driver's compartment.</p>
6.7.2	Compartment ergonomics	<p>The Supplier shall supply state of the art ergonomics engineering to the vehicle driver's environment to maximize driver comfort and ease of operation for extended periods of time.</p> <p>All switches and controls necessary for the operation of the vehicle, including door master, shall be conveniently located in the driver's area and shall provide for ease of operation.</p>
6.7.3	Interior mirrors	In addition to the presence of cameras and displays, mirrors shall be provided for the driver to observe passengers throughout the vehicle without leaving his/her seat and without shoulder movement.
6.7.4	Signage	Signage shall be provided near the driver's compartment. This signage shall state that passengers shall not address the driver, except in emergency situations. The signage shall also state that the driver carries no cash and that any of abuse of the driver shall result in prosecution.
6.7.5	Components	<p>The following are the various components to be found in the area of the driver's compartment:</p> <ul style="list-style-type: none"> <li>▪ Basic toolbox fitted behind the driver</li> <li>▪ Horn</li> <li>▪ ITS components (described below)</li> <li>▪ Driver's sun visor on both the right and left hand windscreen</li> <li>▪ Fire extinguisher placed near the driver, approved to national standards</li> <li>▪ Triangle kit for roadway incidents</li> <li>▪ Lockable storage holder next to driver to place personal belongings</li> <li>▪ Provision of space / holders for operating license certificate and valid operational permit on dashboard or driver side window.</li> </ul>

<b>6.8</b>	<b>Floor</b>	
6.8.1	Floor base	The floor base shall be resistant to moisture and moisture related deterioration. The underframe shall have sufficient stiffeners to keep the flooring from excessive flexing under maximum loads.
6.8.2	Floor covering	<p>The floor covering shall be both aesthetically pleasing as well as durable. The floor covering shall be capable of withstanding daily mopping / wet scrubbing.</p> <p>The floor covering shall be a heavy-duty non-slip material with a minimum thickness of 2 mm. The walking area of the floor shall be level in each section.</p> <p>The color of the floor at the passenger doorways shall contrast with that elsewhere in the vehicle. In front of each doorway, the floor color will be a high-contrast yellow to indicate that passengers are not to block that area.</p> <p>Suppliers shall provide samples of the floor material options being offered. The type and color of the floor covering must be approved by the Employer during the pre-production period.</p>
6.8.3	Access doors in floor	Floor inspection trap doors shall have a quick-acting coupling system to facilitate the access and maintenance of chassis components. All holes in the floor material, for mounting bolts, seams, etc., shall be caulked and sealed before sanding. Access openings in the floor shall be avoided with the exception of access for the fuel tanks sending unit and driveshaft.
6.8.4	Wheel housing	<p>To the extent, any exposed wheel housings are present in the interior space:</p> <ul style="list-style-type: none"> <li>▪ The wheel housings shall be trimmed and sealed at its mating edges.</li> <li>▪ The color of the wheel housing shall compliment vehicle interior. The color will be determined by the Employer during pre-production.</li> <li>▪ The wheel housing shall be finished on the vehicle interior to withstand scuffing, wear and abuse from passenger feet.</li> </ul>
<b>6.9</b>	<b>Partition walls</b>	Partition walls shall be installed just to the front of the second median doorway in order to help provide some protection between the women's and men's area of the vehicle. A partition wall shall also be installed to the rear of the wheelchair bay. The Supplier will also identify a location in the rear of the vehicle (i.e. behind the articulation unit) to place a partition wall that may be used for placement of a route map and/or advertising.

		<p>A partition wall shall also be installed behind the driver; this barrier shall be transparent above 1,000 mm so that the driver has a clear view of the passenger area.</p> <p>Some of the partition walls will be fitted to accommodate a system map and/or advertising.</p> <p>Partitions shall incorporate hand-holds that assist seated passengers in arising or steadying themselves. Adequate clearance shall be provided for passenger's hand between panel and rear half of door, during complete opening and closing cycle. Material color and finish to be determined during the pre-production period.</p>
6.10	<b>Fire and safety equipment</b>	<p>The Supplier shall furnish and install a dry chemical extinguisher with hose assembly. The fire extinguishers shall be located in easily accessible locations.</p> <p>The interior of the vehicle shall be fitted with the required fire and safety decals. The placement of the fire equipment and the decals shall be approved by the Employer during the pre-production period.</p>
6.11	<b>Interior insulation</b>	<p>Aside from the general thermal and acoustic requirements for the body, any seat area over the engine shall be heavily insulated for both noise and heat protection with fiberglass blankets or approved equal.</p>

Section 7: Mechanical		
7.1	Engine / propulsion system	
7.1.1	Propulsion system	The vehicle fleet shall be based on a regenerative diesel-electric hybrid system. Electric propulsion will be generated from regenerative braking system.
7.1.2	Propulsion System Service	The propulsion system shall be arranged so that accessibility for all routine maintenance is ensured. No special tools, other than dollies and hoists, shall be required to remove the propulsion system or any subsystems. However, the Purchaser shall recognize that properly rated test equipment and safe electrical work practices are essential when servicing high-voltage hybrid components. The exhaust system, air cleaner, air compressor, radiator, all engine accessories, and any other component requiring service or replacement shall be easily removable. The Supplier shall provide all specialty tools and diagnostic equipment required for maintaining the propulsion system in accordance with the Special Tools List.
7.1.3	Primary Propulsion Unit and Traction Motor	The propulsion system may be configured in a variety of methods dependent upon type of drive, series and/or parallel. The definition of motor in the context of this specification assumes that the device can provide or consume energy as well as provide or retard mechanical motion.
7.1.4	Energy Storage and Controller	Design and performance data shall be provided by the Supplier to the Purchaser. Energy storage shall be of a commercial design capable of operating in the Purchaser transit environment. The primary charging of the energy storage system shall be accomplished by the on-board hybrid system controller and regenerative braking.  Thermal management will be provided to ensure optimal life and performance of the Electrical Storage System (ESS) over the environmental operating range.
7.1.5	Hybrid System Controller (HSC)	The HSC regulates energy flow throughout hybrid system components in order to provide motive performance and accessory loads, as applicable, while maintaining critical system parameters (e.g., voltages, currents, temperatures, etc.) within specified operating ranges.  The controller shall monitor and process inputs and execute outputs as appropriate to control the operation of all propulsion system components.
7.1.6	Diesel engine position	The engine portion of the system shall be in the rear of the vehicle. Engines / propulsion systems will be separated from the passenger compartment by means of a sound, vapor and fire proof wall.

7.1.7	Charge air cooling	The charge air cooling system, also referred to as after-coolers or inter-coolers, shall provide maximum air intake temperature reduction with minimal pressure loss. The charge air radiator shall be sized and positioned to meet engine manufacturer's requirements. The charge air radiator shall not be stacked ahead or behind the engine radiator and shall be positioned as close to the engine as possible unless integrated with the radiator. Air ducting and fittings shall be protected against heat sources and shall be configured to minimize restrictions and maintain sealing integrity.
7.1.8	Hybrid Drive System Cooling	The engine cooling system should provide coolant bypass flow to the transmission cooling system with the engine thermostats closed. Unless otherwise noted, the transmission cooler is to be the first component to see cold water from the radiator outlet. In addition, all return water piping, aside from the thermostat bypass line, is to be plumbed in after the transmission cooler.
7.1.9	Design Life	The propulsion system shall have a design life of at least 1,200,000 kilometers, subject to proper maintenance practices.
7.1.10	Power	<p>The propulsion system shall be sized to provide enough power to enable the BRT vehicle to meet the defined acceleration, top speed and gradeability requirements, and operate all propulsion-driven accessories using actual road test results and computerized vehicle performance data.</p> <p>The propulsion system shall provide the greater of 15 HP per ton gross vehicle mass or that required to achieve and maintain 60 km/hr on a 4% up grade and 40 km/hr on an upgrade of 8% with a full vehicle load (GVWR).</p> <p>Values are assumed to be sustained. Manufacturer shall supply Purchaser with data if there is a variance between peak performance and sustained vehicle performance.</p>
7.1.11	Maximum speed	<p>The BRT vehicle shall be capable of reaching a top speed of 90 km/hr on a straight, level road at GVWR with all accessories operating. The BRT vehicle shall be capable of safely maintaining the vehicle speed according to the recommendations by the tire manufacturer.</p> <p>For actual operational use the vehicle shall be set to limit maximum vehicle speed to 80 km/hr.</p>
7.2	<b>Fuel / energy system</b>	
7.2.1	Fuel and emission standard	The diesel-fuel portion of the hybrid propulsion system shall conform to a Euro 3 emission and fuel standard.

		<p>Currently, only diesel fuel meeting a EURO 2 emission standard is available in Pakistan. EURO 2 fuel will thus be utilized in the vehicles.</p> <p>However, it is recognized that EURO 2 compatible engines are generally being phased out of production. In addition, the BRT system would benefit from the potential future option of a cleaner emission standard. Thus, the vehicle is to be designed with a propulsion system capable of meeting a EURO 3 emission standard (while recognizing EURO 2 fuel will be employed in the system).</p>
7.2.2	Fuel tank	<p>For the diesel-fueled option, the fuel tank(s) shall be securely mounted to the vehicle to prevent movement during vehicle maneuvers, but shall be easily removed for cleaning or replacement. The tank shall have an inspection plate or removable filler neck to enhance cleaning and inspection. The tank shall be baffled internally to, prevent fuel sloshing regardless of fuel level.</p> <p>The diesel fuel tank shall be sized to allow at least 300 kilometers of operation prior to re-fueling.</p>
7.2.3	Filler provision	The tank filler pipe shall be so designed as to prevent back splash when the tank reaches full, as the fuel fill nozzle shuts off. It is preferred that the fuel filler be located on the left side of the vehicle.
7.2.4	Regenerative braking system	The vehicle shall be equipped with a regenerative braking system to capture the kinetic energy from vehicle deceleration. The energy from the regenerative braking system will be stored in the vehicle's battery bank.
7.2.5	Battery size and range capacity	The battery portion of the regenerative diesel-electric hybrid system shall hold a charge capacity capable of delivering a minimum service range of 50 kilometers. The battery size is estimated at 60 kWh to deliver the target electric-only range.
7.2.6	Electric motor size	The electric motor that will provide the power for electric portion of the vehicle's propulsion system shall be at least 120 kW in size.
7.2.7	Battery replacement pack	As per the warranty agreement, the Supplier shall replace the battery packs on any vehicle once the capacity falls below 70% of its original capacity at full charge.
7.3	<b>Environmental and safety standards</b>	
7.3.1	Emission standards	Vehicles shall conform to the national air-pollution control standards and all other local air-pollution requirements as established for the year of vehicle manufacture. Vehicles shall meet a minimum emission standard of Euro 3.
7.3.2	Noise standards	In no mode of operation shall the vehicle generate external noise levels greater than 65 dB, measured 15 meters from the centerline of the lane in which the vehicle is travelling.

		<p>The interior noise at any location greater than 300 mm from an interior window or wall and 1.2 m from the floor shall not exceed 80 dB during any vehicle operating condition.</p> <p>In addition, the Supplier shall comply with the exterior noise requirements defined in local laws and ordinances identified by the Purchaser.</p>
7.3.3	Safety standards	<p>The vehicle must meet all safety performance standards set for public transport vehicles by the National Government.</p> <p>The BRT vehicle shall be designed and manufactured in accordance with all applicable fire safety and smoke emission regulations. These provisions shall include the use of fire-retardant/low-smoke materials, fire detection systems, firewalls, and facilitation of passenger evacuation.</p> <p>All materials used in the construction of the Passenger Compartment of the BRT vehicle shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993 or later or another internationally recognized standard approved by the Purchaser.</p> <p>Materials entirely enclosed from the passenger compartment, such as insulation within the sidewalls, need not comply. In addition, smaller components and items, such as seat grabrails, switch knobs and small light lenses, shall be exempt from this requirement.</p> <p>Fire sensing and suppression systems shall be provided.</p> <p>The requirements for passenger evacuation provisions related to doors, windows and escape hatches are defined in Section 5 - Body.</p> <p>Other accident and structural safety standards and tests are either in the Attachment or described and determined throughout this document.</p>
7.4	Transmission	<p>Vehicles shall be equipped with electronically controlled automatic gearboxes that are matched to the engine and other drive train components to ensure the required performance characteristics. The system gearbox shall provide smooth power transfer throughout the power range and shall not transfer any power when the gear selector is in neutral.</p>

7.5	<b>Drive shaft</b>	The drive shaft shall be suited to the mass and performance requirements of the vehicles and shall have lubrication fittings provided for the universal and slip joints
7.6	<b>Axles</b>	The vehicles shall have two axles. The vehicle should sustain a maximum axle load on the front axle of 7,700 tons. The vehicle should be capable of sustaining a maximum axle load on the rear axles of 12,000 tons.
7.7	<b>Suspension system</b>	<p>All vehicles shall have air suspension with electronic self-levelling control.</p> <p>The suspension system shall be self-adjusting with respect to any load imbalance that may occur. The basic suspension system shall last the life of the vehicle without major overhaul or replacement.</p> <p>All friction parts of suspension shall be equipped with replaceable bushings and inserts.</p> <p>All axles should be properly aligned so the vehicle tracks accurately within its size and geometry.</p>
7.8	<b>Steering</b>	<p>All vehicles shall be fitted with power steering to reduce steering effort. The system can either be electrically assisted only or an electro-hydraulic system with an electric pump. Steering columns shall be adjustable to accommodate driver need.</p> <p>A power steering fluid reservoir that is easily accessible for checking and filling fluid level without removing any equipment shall be provided.</p>
7.9	<b>Brakes</b>	<p>Vehicles are to have pneumatic anti-lock brake systems designed to ensure safe braking under normal and emergency conditions and appropriate for the operating environment. The braking system shall be balanced such that braking effort is appropriately distributed between all wheels to ensure maximum tire kilometers and equal rate of wear in front and rear brake blocks. The braking system shall meet all current national and local safety standards.</p> <p>An emergency brake release shall also be provided to release the brakes in the event of automatic emergency brake application. The driver shall be able to manually depress and hold down the emergency brake release valve to release the brakes and maneuver the BRT vehicle to safety. Once the driver releases the emergency brake release valve, the brakes shall engage to hold the BRT vehicle in place. Air to the emergency brake release system shall be provided by a dedicated emergency air tank supplied by the electric pump system.</p>



<b>7.10</b>	<b>Tires and wheels</b>	
7.10.1	Tires	<p>The tires shall be capable of operational speeds up to 80 km/h with the specified axle loads. The load on any tire at full GVM shall not exceed tire supplier's rating.</p> <p>The tires shall have a radial ply construction. Tires shall be interchangeable between axles on the vehicle.</p>
7.10.2	Tire to body distance	<p>The effectiveness of the vehicle-to-platform alignment is also affected by the distance from the outer edge of the tire sidewall to the outer edge of the vehicle body. Quite often the tire sidewalls are inset to the inside of the body.</p> <p>The maximum inset distance from the outside edge of the tire sidewall to the outside edge of the vehicle body shall be 125 mm for the front axle and 80 mm for the middle and rear axles.</p>
7.10.2	Wheel characteristics	<p>All wheels on the vehicle shall be of the same size and type interchangeable between front and rear. Each shall be powder coated a color determined by the Employer during the pre-production period.</p> <p>The manufacturer shall furnish one full set of wheels, with one spare for every vehicle provided.</p>
7.10.3	Splash guards/splash aprons	Splashguards / aprons made of composition or rubberized material shall be installed on the body around the periphery of the wheel. The design of the splashguards / aprons shall preclude the accumulation of dirt.
7.11	Turning radius and tracking	<p>The turning radius of the vehicles is a critical parameter in determining the vehicle's ability to properly dock at stations. The minimum turning radius of the vehicles is defined through the tracking movement of the front inner and outer wheels.</p> <p>The maximum turning radius for the outer wheels is specified as 12.0 meters.</p>
7.12	Air system conditioning	<p>The air conditioning system must be capable of maintaining an average interior temperature of between 23°C and 25°C when the ambient temperature is 45°C. The air conditioning system shall be capable of reaching the targeted interior temperature of between 23°C and 25°C within 30 minutes of vehicle operation when the ambient temperature is 45°C. The system shall continue to provide a cooling function until a shut-off temperature of 50°C.</p> <p>Compliance to these temperature targets will be measured at two points in the vehicle. The first location will be the second passenger row behind the driver. The second location will be the second to last passenger row at the back.</p>

		<p>of the vehicle. All measurements will be taken at the height of the seat headrest.</p> <p>The design should be such that it minimizes electricity usage. The system's weight shall also be minimized in order to reduce impacts on axle loads and to reduce impacts on vehicle operating speed. The system shall be designed to function for the life of the vehicle (12 years) when maintained properly.</p> <p>The air conditioning system shall meet these performance requirements using a specified and approved by Purchaser refrigerant.</p>
7.12.1	Air Flow – Passenger Area	<p>The cooling mode of the interior climate control system shall introduce air into the BRT vehicle at or near the ceiling height at a minimum rate of 0.7 cubic meters per minute (cmm) per passenger based on the standard configuration BRT vehicle carrying a number of passengers equal to 150 percent of the seated load. Airflow shall be evenly distributed throughout the BRT vehicle, with air velocity not exceeding 30 meters per minute on any passenger. The ventilating mode shall provide air at a minimum flow rate of 0.3 cmm per passenger.</p> <p>The climate control heater motors and fan shall be designed such that the operation complies with the interior noise level requirements.</p>
7.12.2	Air Flow - Driver's Area	<p>The BRT vehicle interior climate control system shall deliver at least 2.8 cmm of air to the operator's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shutdown of the airflow. The windshield defroster unit shall meet the requirements of SAE Recommended Practice J382 or equivalent, Windshield Defrosting Systems Performance Requirements. The defroster or interior climate control system shall maintain visibility through the operator's side window.</p> <p>A separate ventilation and defroster system for the operator's area shall be provided and shall be controlled by the operator.</p>
7.12.3	Air Filtration	<p>Air shall be filtered before discharge into the passenger compartment. The filter shall meet the US American National Standards Institute (ANSI/ASHRAE 52.1) requirement for 5 percent better atmospheric dust spot efficiency, 50 percent dust arrestance, and a minimum dust holding capacity of 10 grams per 28 cmm cell. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. Air filters shall be easily removable for service. Air filters shall be cleanable.</p>

7.12.4	Roof Ventilators	<p>Three roof ventilators shall be provided in the roof of the BRT vehicle, one approximately over or just forward of the front axle, a second approximately over the second axle and a third in the rear section.</p> <p>The ventilators shall be easily opened and closed manually by a 1.5-meter-high passenger. If roof ventilator(s) cannot be reached by this passenger, then a tool shall be provided to allow this. When operating with the BRT vehicle in motion, these ventilators shall provide fresh air inside the BRT vehicle. Ventilator shall have an opening area no less than 0.28 square meters and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 10cm, or with all four edges raised simultaneously to a height no less than 9cm. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed.</p>
7.12.5	Maintainability	<p>Manually controlled shut-off valves in the refrigerant lines shall allow isolation of the compressor and dehydrator filter for service. To the extent practicable, self-sealing couplings utilizing O-rings shall be used to break and seal the refrigerant lines during removal of major components, such as the refrigerant compressor. Shut-off valves may be provided in place of self-sealing couplings. The condenser shall be designed to efficiently transfer heat to the atmosphere and shall not ingest air warmed above the ambient temperature of the BRT vehicle mechanical equipment, or to discharge into any other system of the BRT vehicle. The location of the condenser shall preclude its obstruction by wheels, tires, road dirt or debris. HVAC components located within 10 centimeters of floor level shall be constructed to resist damage and corrosion.</p> <p>Must have high and low side refrigerant pressure electronic gauges to be in the rear of the vehicle.</p>
7.13	Maintenance and servicing	<p>The engine / propulsion system and battery packs shall be arranged so that access for all routine maintenance is assured. No special tools other than dollies and hoists shall be required to remove or install the power plant. The power plant shall be removable as a complete unit.</p> <p>The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, and accessories and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal.</p>
7.14	Tools, software, diagnostic equipment, and maintenance	

7.14.1	Tools	<p>As part of the supply contract, the Supplier shall deliver to the Employer the following tools:</p> <ul style="list-style-type: none"> <li>▪ One complete set (for 12-meter vehicle type) of the dollies and cradles necessary for the handling of engines, transmission and other heavy components requiring specialist lifting equipment.</li> <li>▪ One complete set (for 12-meter vehicle type) of all tools required for the maintenance of the principal vehicle components.</li> </ul>
7.14.2	Diagnostic equipment and software	<p>The Supplier shall provide 1 sets of diagnostic equipment and 1 sets of software that permits status evaluation of the critical vehicle components. This equipment and software shall indicate the status of the specified equipment and shall be accompanied by the information on any required remedial actions.</p> <p>The diagnostic equipment shall provide information on the following vehicle components:</p> <ul style="list-style-type: none"> <li>▪ Engine unit</li> <li>▪ Battery packs</li> <li>▪ Gearbox</li> <li>▪ System electronics</li> <li>▪ Air Suspension system</li> <li>▪ Wheel and Axle Alignment</li> </ul>
7.14.3	Guidance and instruction manuals	<p>The Supplier shall provide a complete set of vehicle guidance and instructional manuals. These manuals shall as a minimum cover the following topics:</p> <ul style="list-style-type: none"> <li>▪ Description of all vehicle and components, including instructions for assembly and disassembly</li> <li>▪ Description of maintenance and diagnostic procedures</li> <li>▪ Troubleshooting recommendations and procedures</li> <li>▪ Supplier contact details for emergencies, maintenance support, and parts procurement</li> </ul> <p>The manuals shall be provided in correct and proper English. At least four color printed copies shall be provided. At least three digital copies on three (3) USBs shall also be provided.</p>
7.15	Performance documentation	<p>The Supplier shall furnish the following performance documentation:</p> <ul style="list-style-type: none"> <li>▪ Engine Speed vs. Road Speed</li> <li>▪ Horsepower vs. Road Speed</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Specific Fuel Consumption Chart (for diesel-fuel operation)</li> <li>▪ Electricity Consumption Chart (for electric operation)</li> <li>▪ Vehicle Speed vs. Grade (both loaded and unloaded)</li> </ul>
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Section 8: Electrical		
8.1	Internal lighting	<p>The light source shall be located to minimize windshield glare, with distribution of the light focused primarily on the passengers' reading plane while casting enough light onto the advertising display. The lighting system may be designed to form part of or the entire air distribution duct.</p> <p>The lens material shall be translucent polycarbonate. Lenses shall be designed to effectively "mask" the light source. Lenses shall be sealed to inhibit incursion of dust and insects yet be easily removable for service. Access panels shall be provided to allow servicing of components located behind light panels. If necessary, the entire light fixture shall be hinged.</p> <p>When the driver master switch is in the "run" or "night/run" mode the first light module on each side of the BRT vehicle shall automatically extinguish or dim when the front door is in the closed position and illuminate when the door is opened. When in "Off" or "On" all lights shall be also on or off.</p>
8.1.1	Passenger area	<p>Energy-efficient lighting such as LED shall be installed in the cover area on both sides and along the total length of the vehicle and shall not encroach on the minimum interior headroom.</p> <p>The lenses shall be made of polycarbonate material and be sealed to prevent the entrance of dust and insects but shall be easily opened for cleaning and service of ballast and lamp.</p>
8.1.2	Driver's compartment	A driver's compartment lamp with a full-range dimmer shall be mounted to illuminate the entire driver's area.
8.1.3	Interior door lighting	<p>All door threshold area shall be adequately illuminated with Light-Emitting Diode (LED) type lights activated only when the door is open.</p> <p>The lights shall be placed to prevent light from directly shining into passenger or driver's eyes.</p> <p>Light fixtures shall be totally enclosed, splash proof, designed to provide ease of cleaning as well as lamp and housing removal and shall not be easily removable by passengers.</p>
8.2	Exterior lighting	<p>All exterior lights shall be designed to prevent entry and accumulation of moisture or dust. Lamps, lenses and fixtures shall be interchangeable to the extent practicable.</p> <p>Two hazard lamps on each side of the BRT vehicle shall be visible from behind when the engine service doors are</p>

		<p>opened. Light lenses shall be designed and located to prevent damage when passing the vehicle through an automatic BRT vehicle washer.</p> <p>Commercially available LED type lamps shall be utilized at all exterior lamp locations. LED lamps shall be potted type and designed to fasten to the BRT vehicle.</p> <p>LED lamps used as side, brake and turn signal lamps shall be a minimum of 25 mm in diameter.</p>
8.2.1	Headlamps	<p>The headlamps shall utilize halogen/LED technology. The headlamps shall have a sealed beam unit. They should be designed for ease of replacement.</p> <p>Headlamps shall incorporate a daytime running light feature.</p>
8.2.2	Exterior door lighting	<p>An exterior white LED light shall be provided at each door to adequately illuminate the outside area when the doors open.</p> <p>These lamps shall illuminate the street surface to a level of no less than 11 lux at a distance of 90 cm outward from the outboard edge of the door threshold.</p>
8.2.3	Indicator lights, reversing lights, marker lights and reflectors	<p>The indicator lights, reversing lights, marker lights, and reflectors shall have the following characteristics:</p> <ul style="list-style-type: none"> <li>▪ LED lights shall be provided where appropriate.</li> <li>▪ Direction indicator lights shall be visible from front, rear and sides of the vehicle, with additional side units fitted if necessary.</li> <li>▪ The vehicle shall be fitted with reversing lights, which shall also engage the reversing signal, clearly audible in the cab of the vehicle with the engine running.</li> </ul> <p>Marker lights, if fitted, one on each upper corner of the body.</p> <ul style="list-style-type: none"> <li>▪ Reflectors at the front, rear and on the each side of the vehicle shall be provided. Reflectors shall be installed on both sides of the vehicle.</li> </ul>
<b>8.3</b>	<b>Battery and battery compartment</b>	
8.3.1	Battery	<p>Battery and starter motor shall be properly bracketed, sized and fastened to withstand maximum loads that may be encountered.</p> <p>Each battery shall have an expiry date no more than one year from the date of manufacture to the date of shipment to the Purchaser.</p>

8.3.2	Master battery switch	<p>A master battery switch shall be provided near the batteries in the battery compartment mounted to prevent corrosion for complete disconnection of the electrical system.</p> <p>The master switch shall be capable of carrying and interrupting the total circuit current.</p>
8.3.3	Battery compartment	<p>The battery compartment shall prevent accumulation of debris on top of the batteries and shall be vented and self-draining. It shall be accessible only from the outside of the vehicle. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from moisture. The inside surface of the battery compartment access doors shall be electrically insulated, as required to protect the battery terminals from shorting on the compartment. The compartment is damaged in an accident or if a battery terminal is exposed. The battery compartment temperature shall not exceed manufacturers specification.</p> <p>The batteries shall be securely mounted on a stainless steel or equivalent tray that can accommodate the size and weight of the batteries. The battery tray, if applicable, shall pull out easily and properly support the batteries while they are being serviced. The tray shall allow each battery cell to be easily serviced. Locking device shall retain the battery tray to the stowed position.</p> <p>If not located in the engine compartment, the same fire-resistant properties must apply to the battery compartment. No sparking device should be located within the battery box.</p>
8.4	Wiring and cabling	<p>The wiring and cabling on the vehicle shall be color-coded for ease of repair and maintenance as well as safety.</p>
8.5	Stop request system	<p>The vehicle shall be fitted with a stop request system to allow passengers to request the vehicles to stop at a certain stop/station. This system can be utilized during off-corridor operation.</p> <p>Stop-request button shall be provided on the hand-hold bars on both sides of the vehicles. The placement of the stop-request button shall be such that no passenger is more than 1.2 meters away from the button.</p> <p>An indicator light showing the deployment of the stop request will be visible both in the passenger area and in the driver's compartment. The deployment of the stop request button will also be accompanied by a chime noise.</p>



Section 9: Intelligent Transportation System (ITS)		
9.1	Overview of ITS system	<p>The Employer is supplying vehicles that will avail upon ITS applications to improve the passenger experience as well as permit better management of the vehicle fleet and the control of the system.</p> <p>An overview of the vehicle ITS system is provided in Figure 9.</p> <p>The ITS equipment will mostly consist of components that will be procured and installed by the Supplier. There will be two ITS components that will be separately procured by an agent of the Employer (through the Fare System / ITS Company). These components are the: i) Automatic Vehicle Location (AVL) system; and ii) UHF/VHF/Wifi communications system.</p> <p>The ITS equipment to be procured by the Supplier includes:</p> <ul style="list-style-type: none"> <li>▪ Vehicle performance monitoring</li> <li>▪ Vehicle clock</li> <li>▪ Vehicle speed (GPS/GD)</li> <li>▪ Communication</li> <li>▪ Driver Data Terminal (DDT)</li> <li>▪ Digital Video Recorder (DVR)</li> <li>▪ Vehicle video system</li> <li>▪ External variable messaging display</li> <li>▪ Internal variable messaging display</li> <li>▪ Internal communication display</li> <li>▪ Audio system</li> <li>▪ Door and door lock / bridge opening / door synchronization</li> <li>▪ Driver display unit and on-board CCTV cameras.</li> <li>▪ Drive navigation</li> <li>▪ USB ports</li> <li>▪ Traffic signal priority equipment (space provision for future addition)</li> </ul> <p>The ITS equipment that will be provided to the Supplier by agents of the Employer and then to be fitted and installed by the Supplier are the Automatic Vehicle Location (AVL) system and the UHF/VHF/Wifi communications system. The Supplier should not procure the procurement of the AVL units and the UHF/VHF/Wifi system. However, the Supplier must leave the space for the preferably on the driver console for the installation of the AVL units and the UHF/VHF system.</p>

9.2	<b>Vehicle performance monitoring</b>	<p>Vehicle performance monitoring is an essential element for effective fleet management and driver control. The Supplier will monitor and record the most pertinent performance statistics of the major mechanical and electrical components.</p> <p>It is essential that all vehicles are equipped with performance monitoring that will provide information of, at least, the following:</p> <ul style="list-style-type: none"> <li>▪ Speed (wheel speed and odometer based)</li> <li>▪ Fuel used and fuel levels</li> <li>▪ Engine speed (revolutions) and engine hours</li> <li>▪ Vehicle distance</li> <li>▪ Tachograph performance</li> <li>▪ Handling information</li> <li>▪ Engine coolant temperature</li> <li>▪ Ambient air temperature</li> <li>▪ Status of doors and body bridges</li> <li>▪ Time/date</li> <li>▪ Brake pressure</li> <li>▪ Parking brake status</li> <li>▪ Gears and clutch use status</li> <li>▪ Direction of travel</li> <li>▪ Vehicle weight</li> </ul> <p>Data outputs from the monitoring equipment shall be recorded onto the vehicle's Electronic Unit (VLU) for later compilation and analysis. The Supplier shall confirm the required interface in acceptable standards during the final design approval process.</p> <p>The monitoring system must comply with an open interface standard for information exchange typically used for Fleet Management Systems (FMS). For these purposes the system must comply with Bus-FMS-Standards (<a href="http://www.bus-fms-standards.com">www.bus-fms-standards.com</a>). The Supplier shall provide a detailed interface specification for this interface. The monitoring system must be able to interface with the AVL unit provided and log data in a format acceptable to the Employer.</p>
9.3	<b>Vehicle weight</b>	<p>The Supplier shall ensure that the vehicle weight is recorded at different points in time. The total weight of the vehicle also includes the weight of the passengers, and in particular, will include the weight of the axle loads.</p> <p>There will be a number of general uses for the data collected. This data will be correlated to GPS position to estimate the number of passengers on board the</p>

		<p>vehicle at different segments of the route. The weight values shall not be used to estimate the number of passengers boarding and alighting at each station. Second, the axle load data will help ensure compliance to the legal load-carrying limits of the vehicle.</p> <p>Data from the vehicle weight scale shall be recorded onto the Vehicle Logit Unit (VLU) and made available through the Bus-FMS interface.</p>
9.4	<b>Vehicle Logit Unit (VLU)</b>	<p>The VLU is the core computer server for most of the data and ITS functions on board the vehicle.</p> <p>The VLU shall be placed in a location that allows effective connectivity to the various ITS components. The location shall also ensure that the VLU is physically well-protected.</p> <p>The VLU must be compatible to function with both the equipment in this specification as well as the ITS components procured by a third party entity. The Supplier must work closely with the third-party Fare System / ITS Company to ensure compatibility.</p> <p>The Supplier shall provide a description of the technical specifications (hardware, interfaces, and operating system) of the VLU and interface specifications allowing the integration of the following:</p> <ul style="list-style-type: none"> <li>▪ Vehicle performance monitoring</li> <li>▪ Communications unit</li> <li>▪ GPS positioning data</li> <li>▪ Digital Video Recorder</li> <li>▪ External variable message sign display</li> <li>▪ Internal variable message sign display</li> <li>▪ Internal information display</li> <li>▪ Audio system</li> <li>▪ Panic alarm</li> </ul>
9.5	<b>Communications Unit</b>	<p>The Communications Unit shall control the flow of communications and information between the vehicle and the control center. This includes both real-time data exchange as well as storage in memory for later downloads at the depots.</p> <p>The communication system will also permit verbal communication between the driver and the control center. The verbal communication system will be designed so that the driver can communicate hands-free of the device, but still capable of hearing the cabin sound.</p> <p>The Communications Unit is comprised of a router and all antennae required for mobile communication (ISM/GPRS/LTE/3G/4G)</p>

		<p>connectivity, 3G and 4G connectivity and GPS positioning. A separate cable between the GPS antenna and the VLU shall be included.</p> <p>The Communications Unit will provide connectivity through 3G and 4G mobile networks. The Communications Unit will provide at least two slots for different SIM cards, and thus enabling the option of multiple simultaneous 3G connections. Due to concerns regarding the reliability of the existing 3G and 4G mobile networks, the provision of communications via UHF/VHF radio bandwidth will be provided by the Employer and the Fare System / ITS Company. The Supplier will work with the Employer and the Fare System / ITS Company to ensure the physical integration of the UHF/VHF system in the driver dashboard console. The Fare System / ITS Company will be responsible for providing the UHF/VHF system. Thus, the Supplier shall interface the UHF/VHF system.</p> <p>The Communications Unit will also provide the passenger WiFi system. Alternatively, passenger WiFi could also be provided through a separate access point and router (see 9.8 below).</p>
9.6	<b>Driver Data Terminal (DDT)</b>	<p>The Driver Data Terminal (DDT) is a computing device that enables the driver to visually understand vehicle performance parameters.</p> <p>The device shall be equipped with a color LCD touchscreen display designed for operation in a public transport environment and shall be managed and controlled by the VLU.</p>
9.7	<b>Digital Video Recorder (DVR)</b>	<p>All CCTV footage shall be recorded onboard by the Digital Video Recorder (DVR). The DVR shall be connected to the VLU for management purposes. Video footage on the DVR will be downloadable and viewable if required.</p> <p>DVR must have the capability to record for two days.</p> <p>The vehicle shall provide free access to passengers.</p>
9.8	<b>Vehicle Wi-Fi</b>	<p>The Supplier shall procure a vehicle WiFi system. This system must also be inter-operable with the WiFi systems of the separate Fare System / ITS Company. During the production and production communication with the Fare System / ITS Company to ensure interoperability between the vehicle WiFi system and the Fare System / ITS Company WiFi systems.</p>

		<p>The Wi-Fi equipment will include a Wi-Fi receiver and router. The minimum download speed for the Wi-Fi system within the vehicle shall be at least 10 megabits per second (Mbps).</p> <p>The Supplier shall be responsible for fitting and installing the Wi-Fi receiver and router into the vehicle. The fitting of the equipment will be provided in a manner to ensure Wi-Fi connectivity in all passenger locations of the vehicle. The Supplier shall provide all necessary wiring and cabling for the system.</p> <p>The passenger Wi-Fi may also be provided by a receiver and router incorporated with the vehicle's communication Unit (see 9.5 above).</p>
9.9	<b>External variable messaging display</b>	<p>An external variable messaging display shall be provided on the top front of the vehicle. The external variable messaging display will indicate three possible types of information: 1.) Route destination; 2.) Name of route; and 3.) Emergency messages.</p> <p>The external display shall utilize high brightness, wide viewing angle, ambient LED technology. LED brightness shall be controlled by photocells installed as part of the sign.</p> <p>The controller shall communicate with the on-vehicle VLU. It shall be possible to view messages directly from the controller under all weather conditions.</p> <p>The display shall be capable of showing upper and lower case characters with proportional spacing. The display shall be capable of showing double width (bold) fonts. The front face of the display shall be designed to minimize glare.</p> <p>The display shall have the capability to display messages in the following modes, set through configuration:</p> <ul style="list-style-type: none"> <li>▪ A single, non-scrolling or scrolling message</li> <li>▪ A right to left scrolling message</li> <li>▪ An alternate (between two) scrolling message.</li> </ul> <p>The LEDs shall have a minimum service life of 80 000 hours in their installed configuration. The system shall be designed for continuous operation without the need to manually "refresh" computers. Visible messages</p>

		<p>shall begin loading within the second of being triggered.</p> <p>External variable message sign shall be capable of displaying the message in Urdu and English.</p>
9.10	<b>Internal variable messaging display</b>	<p>Two internal variable message displays shall be provided, one for the front portion and one for the rear portion of the vehicle. The displays will provide the following type of information:</p> <ul style="list-style-type: none"> <li>▪ Name of next station</li> <li>▪ Route name and route map</li> <li>▪ Route description</li> <li>▪ Time.</li> </ul> <p>The onboard displays shall utilize high brightness, wide viewing angle liquid crystal display (LCD) technology. The display shall be readable from a distance of up to 8 meters. Messages on the displays shall be legible during any time of day and from any designated passenger position on the bus. The proposed location of the displays will be noted in the tenderer's functional layout drawing.</p> <p>The display will interface with the Real Time Passenger Information (RTPI) System supplied by the ITS Supplier for display of messages.</p> <p>During the pre-production stage the employer will specify the font type, color of the background, color of the lettering, and colors of any branding on the displays.</p> <p>The displays will interface with and be controlled by a Vehicle Logic Unit.</p> <p>Internal variable message sign shall be capable of displaying the message in Urdu and English.</p>
9.11	<b>Internal infotainment display</b>	<p>Minimum Two (2) infotainment displays shall be provided inside the vehicle. The infotainment displays will show full color video entertainment programs, public service announcements and advertisements.</p> <p>The displays will be placed to be viewable for most passengers. The displays shall be high brightness, wide viewing angle LCD technology. The display resolution shall be at least 1280 x 800 pixels.</p>

		<p>The display will interface with the Real Time Passenger Information (RTPI) System supplied by the ITS Supplier for display of messages.</p> <p>The displays will be enclosed in a shatterproof casing with toughened glass. The surface of the displays shall be coated with an anti-glare layer to enable viewing during any time of the day.</p> <p>Content for the information display may also be stored and connected to the VLU. The video signal input ports will be provided.</p>
9.12	Audio system	<p>The audio system shall be capable of both digital audio messages programmed into the Vehicle Logical Unit (VLU) as well as public address messages from the driver.</p> <p>The audio system will be programmed in relation to the vehicle position in order to automatically deliver specific station information. Upon arrival at a station, the digitally-recorded message will announce the station name as well as the name of possible transfer routes. A digital announcement will also be made stating that the doors are opening. Upon departing a station, a digitally-recorded message will announce the doors are closing. The digital announcement will then name the route name, final destination, and the next station.</p> <p>The display will interface with the Real Time Passenger Information (RTPI) System supplied by the ITS Supplier for display of messages.</p> <p>Messages from the driver on the public address system will only occur to announce specific messages or situations, such as reasons for delays or emergency instructions. The digital recording of the message will be the responsibility of the Employer.</p> <p>The volume of the announcer shall be adjustable to a standard level and be configurable. The system shall include an automatic gain control that automatically and independently adjust interior and exterior volumes depending on interior and exterior ambient noise levels.</p> <p>The audio system shall be controlled by the VLU and the input ports must be before the interface with the VLU.</p>
9.13	Door opening and synchronization unit	<p>The opening and closing of the station doors (both sides) shall be synchronized with the opening and closing of the station doors. The switch for the driver console</p>

		<p>will actuate all side doors and station doors simultaneously.</p> <p>The sliding door on the station side shall be supplied by an agent of the Supplier (through Infrastructure Civil Works company). The Supplier shall provide all the necessary information to enable Infrastructure Civil Works company procure the appropriate sliding door technology to receive the door opening/closing signal from the BRT vehicle.</p>
9.14	<b>Driver displays and on-board CCTV cameras</b>	<p>Closed-circuit television (CCTV) cameras shall be provided for vehicle surveillance to ensure passenger security and vehicle safety.</p> <p>The vehicle shall be fitted with at least four (4) CCTV cameras. One camera will cover the front curb-side door and the driver compartment. One camera will cover the front passenger seat and the front side doorways. One camera will cover the rear passenger area. One camera will face behind the rearview mirror and the driver to assist the driver when reversing.</p> <p>Output from the cameras will be shown through a visual display on or near the dashboard. The driver shall have a visual digital display of the area behind the vehicle whenever the vehicle is in reverse.</p> <p>The video footage from these cameras shall also be stored on-board on a digital video recorder (DVR). The Supplier will provide all cabling and connectivity between the cameras and the DVR.</p> <p>In normal operations, the video footage will be downloaded from the vehicle to the depot. The Supplier must ensure the system so data can be readily downloaded from the vehicle to the depot. In emergency situations, the system shall allow streaming of onboard footage to the control center.</p> <p>The video from the cameras shall be connected to the Vehicle WiFi network (provided by ITS Supplier) for relay to Control Center.</p> <p>The Supplier shall work with the Control Center layer to ensure the video output can be integrated with the control center's hardware and software.</p> <p>All cameras will be integrated into the interior layout of the vehicle in a way that appears unobtrusive. The precise</p>





		<p>control of the vehicle. The AVL unit will be fitted into the driver console and will be integrated with the AVL unit. The AVL unit will also be integrated with the Vehicle Logic Unit (VLU), allowing it to:</p> <ul style="list-style-type: none"> <li>▪ Relay vehicle information to the control centre</li> <li>▪ Receive commands from the control centre</li> <li>▪ Relay video from the control centre</li> <li>▪ Control the operation of the vehicle and infotainment displays</li> <li>▪ Feed the data to the control centre</li> <li>▪ Relay passenger data to the control centre.</li> </ul> <p>The AVL system will be monitored from the operational control centre via the RT system. The Employer is responsible for procuring a third-party agent, a Fare System Company, to install and operate the control centre. The Supplier Company will be responsible for installing the components required to monitor the vehicle within the control center. These components include the communications equipment, and the control center.</p> <p>To ensure system compatibility, the AVL unit in the vehicles will be provided by the Fare System / ITS Company. The Supplier will price the AVL unit in the vehicle.</p> <p>The AVL and VLU system will be based on an open software standard.</p> <p>The Supplier will work closely with the Employer to determine the requirements for the AVL system being provided by the Fare System Company. During the pre-production phase, the Supplier shall communicate with the Fare System / ITS company. The Supplier shall work in close consultation with the Fare System / ITS company to ensure full functionality of the AVL system, including the software integration, and the electrical requirements.</p>
9.19	<b>UHF/VHF/Wifi Mesh system</b>	<p>Due to congestion on mobile telephone networks in the city, the vehicle will also be fitted with a communication system that uses UHF/Wifi Mesh radio bandwidth.</p> <p>The UHF/VHF/Wifi Mesh system will be procured by the Fare System / ITS Company. The Supplier will price the unit in the vehicle bid.</p>

		<p>The Supplier shall ensure that the Supplier and the Fare System / ITS are provided with sufficient physical space and to ensure the operational control of the line of the</p>
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Section 10: Bus Prototype Testing		
10.1	Overview of Bus Prototype Test	As explained in the Schedule 5, the Schedule of Delivery, a Prototype Bus will be produced for the approval of detailed design. Certain tests will be conducted with this Prototype bus in order to assess the performance of bus. A minimum list of these tests is given in the section below, however the Supplier may choose any additional tests deemed necessary. Also the Employer can ask for a few additional tests while conducting these Prototype Testing.
10.2	Bus Basic Compliance Tests	The objective of this test is to ensure that the bus complies with all the basic requirements.
10.3	Bus Physical Inspection	The objective of this test is to carry out physical inspection of the bus both from the exterior and internal sides to assess the overall condition of the bus.
10.4	Safety Test – Double Lane Change (Obstacle Avoidance Test)	The objective of this test is to assess the handling and stability of the bus by making it pass through a double lane change test.
10.5	Performance Tests	
10.5.1	Acceleration, Gradeability and Top Speed Test	The objective of this test is to determine the acceleration capabilities of the bus. Best is to have an acceleration directly and a speed curve. Gradeability can then be calculated.
10.5.2	Bus Braking Performance Test	The objective of this test is to provide braking performance data.
10.6	Structural Integrity Tests	
10.6.1	Structural Shakedown Test	The objective of this test is to determine certain static characteristics (e.g., bus frame deflection, permanent structural deformation) under static loading conditions.
10.6.2	Structural Distortion	The objective of this test is to determine the operation of the bus subsystems when the bus is subjected to a longitudinal twist simulating operation on a road with a pothole.
10.6.3	Static Towing Test	The objective of this test is to determine the characteristics of the bus towing mechanisms under static loading conditions.
10.6.4	Dynamic Towing Test	The objective of this test is to determine the integrity of the towing fixtures and determine the ability of towing the bus under manufacturer's requirements.
10.6.5	Jacking Test	The objective of this test is to determine the ability of jacking the bus with a portable hydraulic jack to a height sufficient to replace a component.

<b>10.6.7</b>	Hoisting Test	The objective of this test is to determine possible damage or deformation caused by hoisting.
<b>10.6.8</b>	Rollover Test	The objective of this test is to determine crashworthiness - the ability of the vehicle to protect passengers in the event of a crash.
<b>10.7</b>	<b>Noise Tests</b>	
<b>10.7.1</b>	Interior Noise and Vibration Test	The objective of these tests is to measure and record interior noise levels and vibration under various operating conditions.
<b>10.7.2</b>	Exterior Noise Test	The objective of this test is to measure and record exterior noise levels when a bus is operated under various conditions.

# Figures

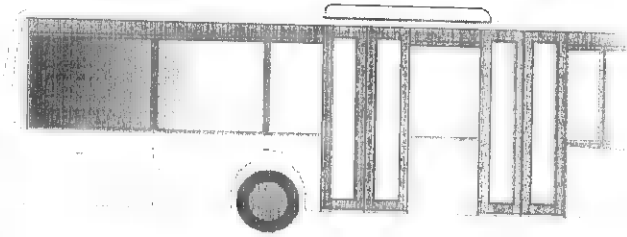


Figure 1. Example of a modern body shape with a curved window line on vehicle



Right Side View

3-meter BRT

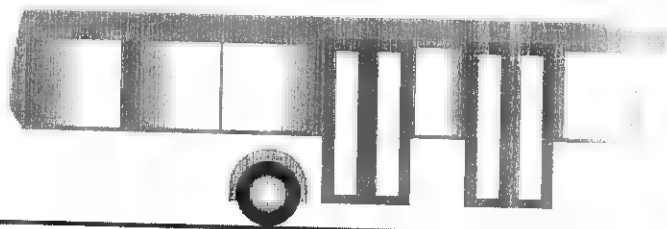
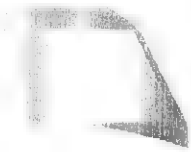


Figure 2. Example of a modern body shape with a slanted window line on vehicle



Right Side View

3-meter BRT

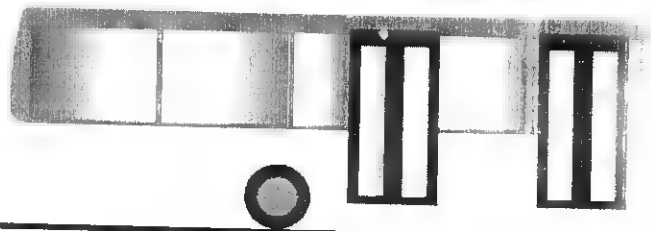
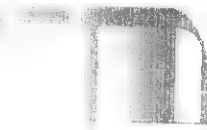


Figure 3. Example of a modern body shape with a rounded front end on vehicle



Right Side View

3-meter BRT

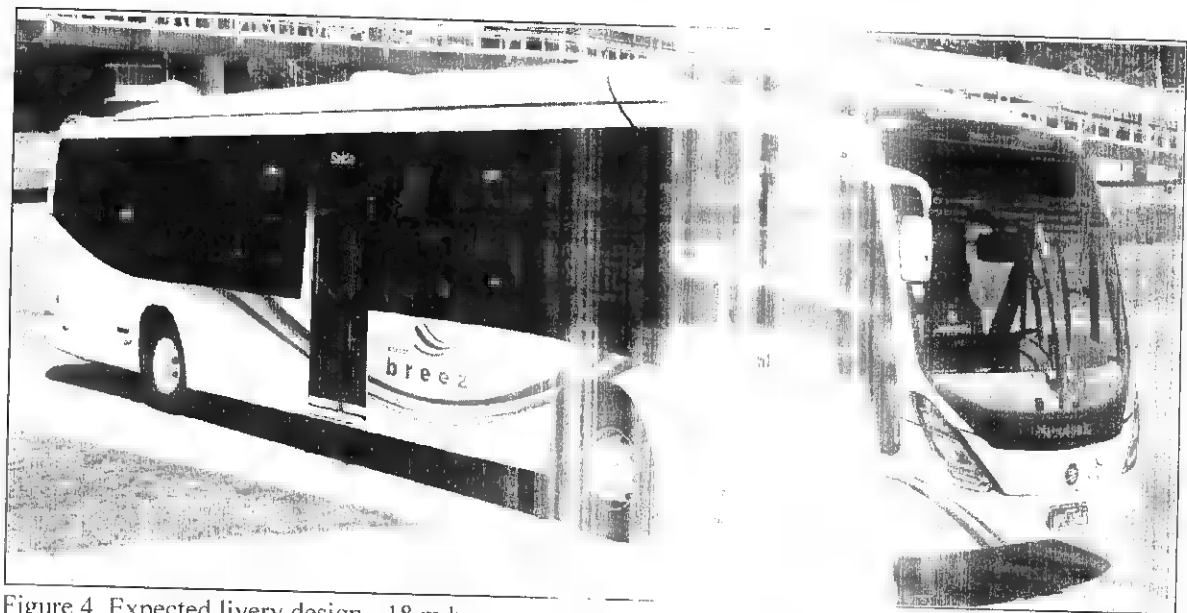


Figure 4. Expected livery design - 18 m bus.



Figure 5. Example of a manual pull-out boarding platform for the doorways of the 12 m bus.

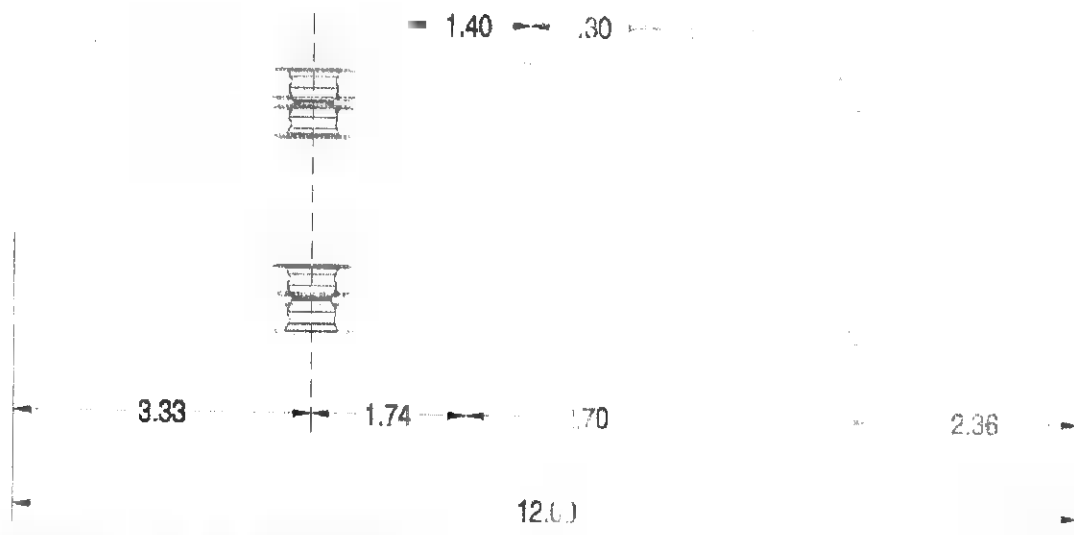


Figure 6. A 12-m BRT vehicle layout.



Figure 7. Example interior views.



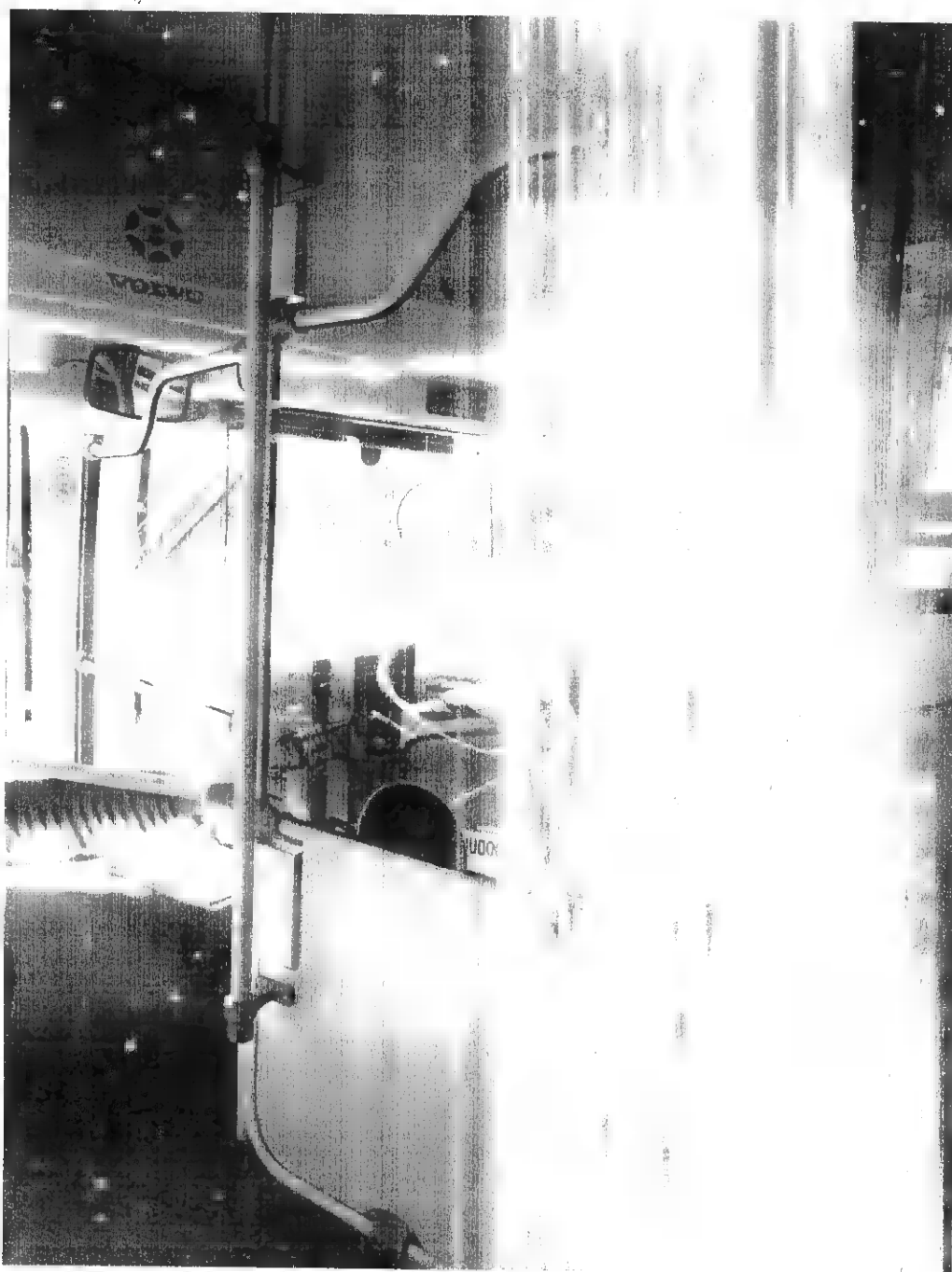


Figure 8. Example of an enclosed driver's compartment with limited peripheral vision and the ability to communicate with the outside world.



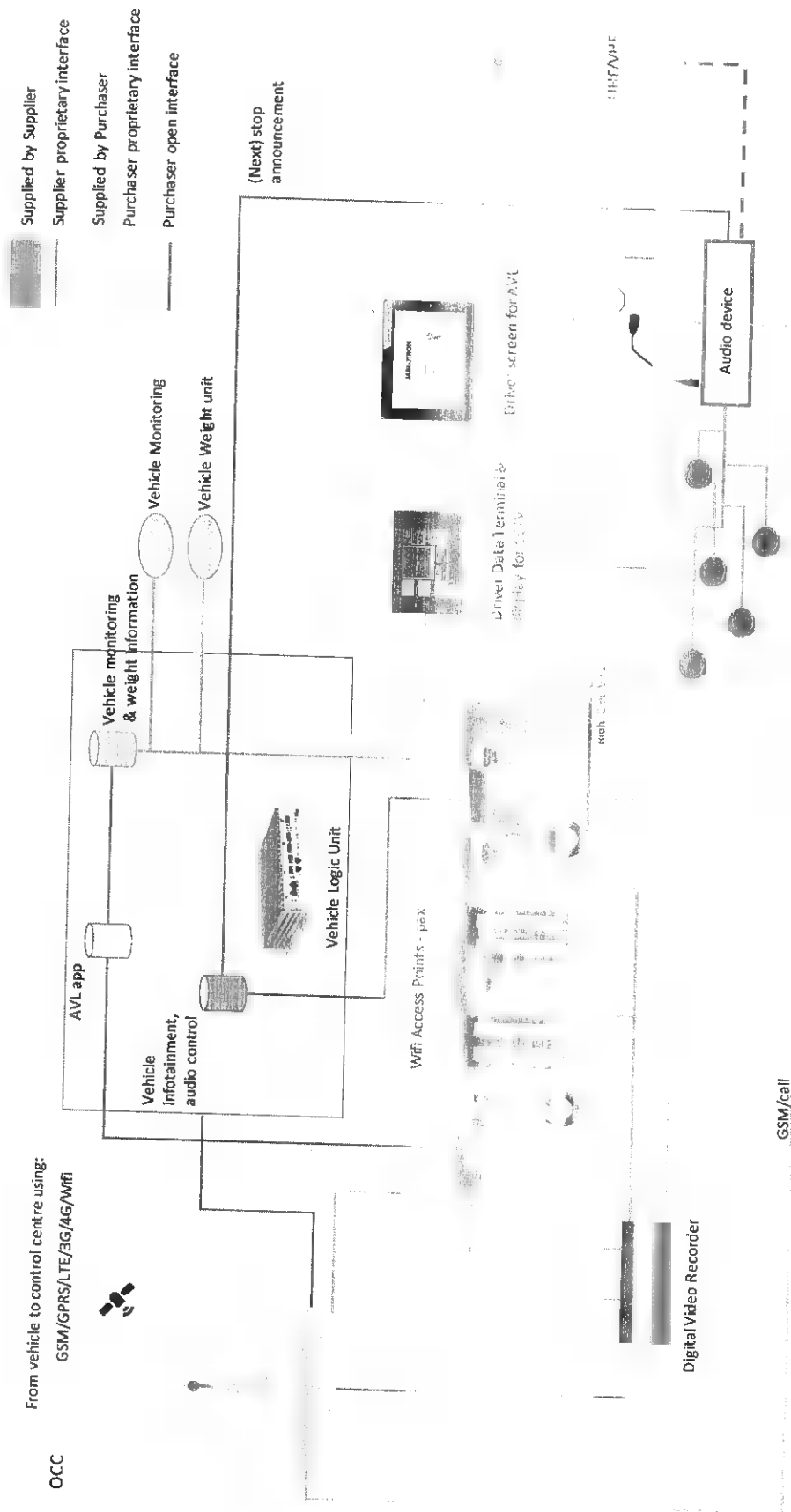


Figure 9. Overview of vehicle ITS system



Result Based Monitoring (RBM) Indicators

Input	Output	Outcomes		Targeted Impact
		Baseline Indicator	Targets after Completion of Project	
Construction of BRT corridor, Procurement of Buses and Intelligent Transport Systems & Bus Operations & Maintenance, Physical Integration (of ASE and GL BRT) & Infrastructure Maintenance of the ASE BRT corridor at a cost of Rs. 4.024 billion.	About 3.88 km BRT corridor with at-grade section except elevated section of 0.729 Km (from Panch No. intersection to TMA Orangi) and stations, pedestrian structures, mixed traffic lanes, utilities rehabilitation and reconstruction and allied facilities which will connect Orangi TMA to the Green Line BRT system for onward journey to Saddar and Surjani Town in addition to procurement of Revenue Collection / ITS system and buses.	At present, there is no proper mass transit system in Karachi. The BRT projects of Red BRT and Yellow BRT have been undertaken and are at construction and detailed design stage respectively. The Green BRT and ASE BRT operationalization with proper integration will result in lesser road congestion and modal shift along these BRT corridors. The stretch between Orangi TMA and KDA Roundabout will serve as a branch line to the high demand BRT Green Line corridor between Surjani and Saddar.	A high quality, reliable, affordable, high speed mass transit system that will provide timely and comfortable transfer service to the commuters, thereby improving their quality of life, reduce traffic congestion and environmental degradation on the road. The integration and operations of the ASE BRT with Green BRT will be the first proper mass transit facilities for the residents of the Karachi city, and will provide a learning curve to be utilized in the subsequent mass transit projects. Phase 2 of the ASE BRT project which is basically extension of the ASE BRT beyond TMA office must also be undertaken immediately to enhance the connectivity of the ASE BRT and the Green BRT system.	This ASE BRT will act as a feeder to the Green BRT. The construction of ASE BRT will increase ridership of Green BRT and hence connectivity, which is one of the most high demand corridor.























